UNITED STATES ARMY

AVIATION DIGEST

MARCH 1981

MARCH 1981 • VOLUME 27 • NUMBER 3

★
Brigadier General Richard D. Kenyon
Army Aviation Officer
ODCSOPS, Headquarters,
Department of the Army

★★
Major General Carl H. McNair Jr.
Commander
U.S. Army Aviation Center
Fort Rucker, Alabama

Colonel Kenneth J. Burton
Acting Assistant Commandant
U.S. Army Aviation Center
Fort Rucker, Alabama

page 8

page 10

2 **Fire Support For The Attack Helicopter,** MG Edward A. Dinges and MAJ Joseph F. Pullano
6 **25th Century Today,** SSG Ronald D. Cisco
8 **Ghost Riders In The Sky,** Helen A. McCollough
10 "**Out I Went!**" Michael Biddle
12 **RWART: The Commander's Friend,** CW3 Charles Farmer
13 **FORSCOM Flyoff Results**
14 **PEARL'S**
17 **Refueling Aircraft At Home Or Away,** CW3 Robert R. Atchison
18 **Can Do (ISM'S) Can Kill!** CW3 David M. Battle
19 **Fifth International System Safety Conference**
20 **Reporting Final**
23 **Views From Readers**
24 **Bright Star '81,** Betty Goodson
26 **Hangar Talk,** CW2 Gary R. Weiland
27 **DES Report To The Field: On-The-Job Training**
30 **Radio Silence—A Good Way To Buy Victory,** LTC James J. Rudy
32 **Help Wanted,** David Hubble
36 **Aviation Personnel Notes:** LTC Joe D. Carothers
38 **A Resolution Conference At The Army Aviation Center,** Betty Goodson
41 **Threat: Who Has The Advantage?** MAJ Frank E. Babiasz and 1LT Mark Grablin
45 **Putting A Cap On Head Injuries,** J. J. Johnson
48 **Officer Basic Course Orientation Program,** MAJ Victor M. Sathre

Inside Back Cover: **ATC Action Line: Visual Approach Do's and Don'ts**
Back Cover: **Armywide Flyoff Winners**

Cover: **Fire support for Army Aviation—in particular the attack helicopter company as a maneuver element. Read what was concluded from CSSG II in the story beginning on page 2. Cover art by Fred Martin**

page 24

page 41

page 45

Richard K. Tierney
Editor

The mission of the ***U.S. Army Aviation Digest (USPS 415-350)*** is to provide information of an operational, functional nature concerning safety and aircraft accident prevention, training, maintenance, operations, research and development, aviation medicine and other related data.

The ***Digest*** is an official Department of the Army periodical published monthly under the supervision of the Commanding General, U.S. Army Aviation Center. Views expressed herein are not necessarily those of the Department of the Army nor the U.S. Army Aviation Center. Photos are U.S. Army unless otherwise specified. Use of the masculine pronoun is intended to include both genders unless otherwise stated. Material may be reprinted provided credit is given to the ***Digest*** and to the author, unless otherwise indicated.

Articles, photos and items of interest on Army Aviation are invited. Direct communication is authorized to: Editor, ***U.S. Army Aviation Digest,*** P.O. Drawer P, Fort Rucker, AL 36362. Manuscripts returned upon request.

This publication has been approved by The Adjutant General, Headquarters, Department of the Army, 25 April 1980, in accordance with Army Regulation 310-1.

Active Army units receive distribution under the pinpoint distribution system as outlined in AR 310-1. Complete DA Form 12-5 and send directly to CDR, AG Publications Center, 2800 Eastern Boulevard, Baltimore, MD 21220. For any change in distribution requirements, initiate a revised DA Form 12-5.

National Guard and Army Reserve units under pinpoint distribution also should submit DA Form 12-5. Other National Guard units should submit requests through their state adjutant general.

Those not eligible for official distribution or who desire personal copies of the ***Digest*** can order the magazine from the Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402. Annual subscription rates are $20.00 domestic and $25.00 overseas.

ARMY AVIATION is the combat arm that cuts across all functions of land combat—maneuver, fire support, command and control, intelligence and logistics—and the more we know about each of these areas, the better we can perform our mission.

An advantage which the ***Aviation Digest*** enjoys is the receipt of contributions from people at all echelons of our Army and Army Aviation in particular. The end result is a variety of wide ranging and interesting topics appearing in each issue. This is especially true this month.

The lead article, "Fire Support for the Attack Helicopter," addresses one of our most vital combat areas—firepower. Major General Edward A. Dinges, commandant of the Field Artillery School, Ft. Sill, OK, and Major Joseph F. Pullano, the school's senior maneuver instructor (and a Senior Army Aviator), tackle the problems of how and by whom that support is to be furnished. They describe quite vividly the past and present state and then provide a detailed account of solutions expected to evolve from implementation of the Close Support Study Group II recommendations.

In the January ***Digest's*** "Reporting Final," Major General Jack V. Mackmull, commanding general, 101st Airborne Division (Air Assault), Ft. Campbell, KY, reported on the participation of division elements in the Rapid Deployment Task Force's Operation Bright Star '81 in Egypt. A more detailed record of lessons learned from that desert training is included in this issue, and it is expected that other in-depth articles from the 101st will be forthcoming. "Bright Star" not only reaffirmed that air assault forces are effective in desert warfare, but also alerted us to necessary adjustments in our training and equipment which must be made as we prepare for that environment. We need more of this type of information from our units in the field, be it on mountain operations, operations in cities or jungles, or even in the Arctic. Such lessons learned are invaluable to our aviators everywhere who may someday be thrust into these areas.

And as we progress in our training and training developments, one means of effecting needed changes is recounted in "A Resolution Conference at the Army Aviation Center." It provides a rather detailed account of the work done at a Training Symposium and Policy Committee Meeting held at Ft. Rucker in December when aviation officers worldwide gathered to review issues from the field and propose solutions to DA.

A very welcome reformation for Army aviators' careers was the establishment of Specialty Code 15 (aviation) as a combat arms and an accession specialty. Major Victor M. Sathre of the Directorate of Training Developments, Army Aviation Center, Ft. Rucker, provides some excellent background information in "Officer Basic Course Orientation Program." This program, he writes, "provides answers regarding career progression, training structure and rationale for SC15, and reasons an SC15 officer must attend the officer basic course of another combat arm."

Another of the Center's training programs is described in "RWART: The Commander's Friend" by Chief Warrant Officer, CW3, Charles Farmer, Department of Flight Training, Cairns Division. His subject is the Rotary Wing Aviator Refresher Training course for "aviators who are on orders from a nonflying to a flying assignment." This relatively new, but long needed, course benefits our units greatly. It ensures that aviators newly assigned from previously nonflying billets arrive current in the UH-1 aircraft with a renewed instrument rating and do not have to be refresher-trained by the unit.

Finally, we can all learn how *not* to exit a U-21 by reading "Out I Went." This describes perhaps one of the most harrowing and frightful experiences an aviator might encounter—being sucked from an aircraft at 9,000 feet and hanging on the exit-stairway door for an "eternity" without someone in the aircraft to help pull you in. Written by Michael Biddle of the Public Affairs Office, Armament Research and Development Command, Dover, NJ, this article relates James Tobin's experience of a few months ago. Read it and I am sure you will agree that God was also a copilot on the flight.

All in all, a splendid, very readable issue awaits you. Good reading and good flying lie ahead.

Major General Carl H. McNair Jr.
Commander, U.S. Army Aviation Center
Fort Rucker, AL

FIRE SUPPORT for the ATTACK HELICOPTER

Major General Edward A. Dinges
Commandant
U.S. Army Field Artillery School
Fort Sill, OK

Major Joseph F. Pullano
Senior Maneuver Instructor
U.S. Army Field Artillery School
Fort Sill, OK

GLOSSARY

ADA	air defense artillery
AFA	aerial field artillery
AHC	attack helicopter company
ARA	aerial rocket artillery
CP	command post
CSSG II	Close Support Study Group II
DA	Department of the Army
divarty	division artillery
FAAO	field artillery aerial observer
FIST	fire support team
FM	frequency modulated; field manual
FO	forward observer
FSE	fire support element
FSO	fire support officer
FSS	fire support section
HELLFIRE	Helicopter Launched Fire and Forget
mm	millimeter
OPCON	operational control
SEAD	suppression of enemy air defense
TC	training circular
TOC	tactical operations center
TOE	table of organization and equipment
TOW	tube-launched optically-tracked, wire-guided (missile)
TRADOC	Training and Doctrine Command

MANY ARTICLES have been published about fire support for attack helicopters and Army Aviation in general, but none adequately addresses either who will plan this fire support or who will provide it. For example, in an article entitled "SEAD and the 2-Minute Drill" in the February 1980 issue of ***Aviation Digest,*** Captain Demetrio J. Tehero notes:

> **. . . the most glaring shortcoming of all, which points to the need for detailed training, is the lack of preparation for SEAD contingencies at the company level. The thought of countering threat air defense weapons is given only mental consideration, and, like threat capabilities, they are disregarded with a turn of the head. Coordination never is carried to the last link—the fire support officer or the direct support artillery battalion. When questioned about dealing with ADA, frequently responses will incorporate data about a mythical gunship escort or readily available artillery fire from an unknown battery to unplanned targets on unfamiliar terrain at undetermined grid coordinates . . . .**

The U.S. Army Field Artillery School, Ft. Sill, OK, has been working hard to resolve this fire support dilemma. This article reports our progress.

Currently, planning and coordination of fire support requirements for attack helicopters must be accomplished by the attack helicopter company commander, assisted by the brigade FSO to which the AHC is OPCON.

This is generally the way fire support has been planned for attack helicopter companies for the last 15 years. It was a fairly adequate system during the Vietnam era because helicopter gunships were largely limited to escorting lift ships into a landing zone on an airmobile assault. In such operations the ground tactical commander directed the entire airmobile planning sequence,

from the ground tactical plan, which included the scheme of maneuver and fire support plan, through the landing plans, air-movement plans and loading plans.

At the same time, until the appearance of TOW, the closest aviation organization to what is now the attack helicopter company was the old aerial rocket artillery battalion, later called an aerial field artillery battalion. Fire support planning for ARA or AFA units was fairly simple, since all commissioned officers assigned to those units were Field Artillerymen. The AFA battalions were attached to the divarty of the air assault division. They functioned exactly like artillery units and operated in the divarty communications net. The only difference between AFA battalions and tube artillery battalions was the use of the helicopter as the prime mover for a direct fire rocket system, in place of 2½-ton trucks hauling 105 mm howitzers into position to shoot indirect fire missions.

In contrast, today's attack helicopter company is considered a maneuver, not a fire support system. By doctrine, its primary mission is to destroy tanks and other armored vehicles in concert with other members of the combined arms team. Accordingly, the AHC requires the same Field Artillery and close air support as other close combat elements. Hence, the requirement for fire support planning for the attack helicopter company and the problem, who is going to do it? Although AHC commanders are responsible for fire support planning, as maneuver commanders they will probably have neither the time nor the expertise to devise a viable fire support plan. Relying instead on the FSO of the brigade to which the attack helicopter company is OPCON may be no more satisfactory given the FSO's time constraints, the fluidity of the battlefield, and contingency missions that can require the AHC to move to new tactical sectors, or under OPCON of a new brigade at a moment's notice.

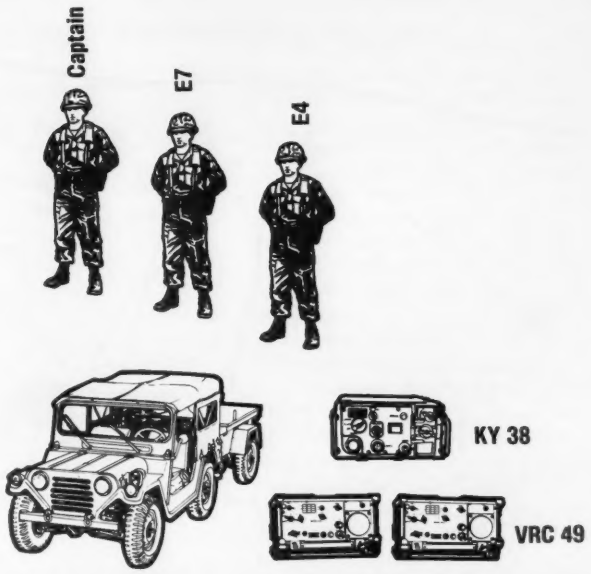


FIGURE 1: FIRE SUPPORT SECTION AERIAL MANEUVER UNIT

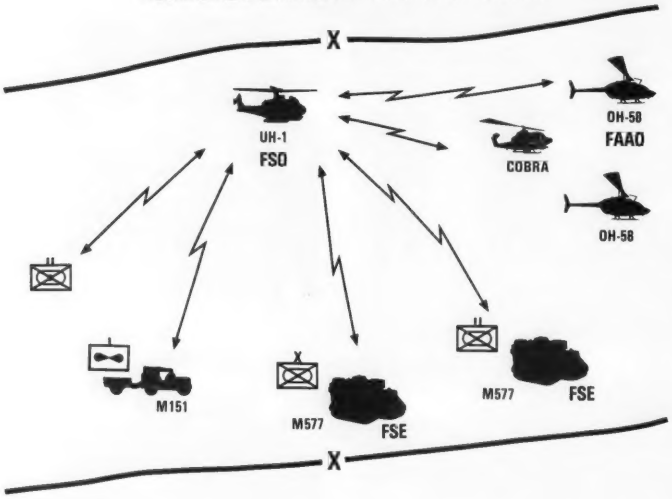
Nor, currently, can we rely on a fire support team. The FIST concept approved by Department of the Army on 27 June 1977 placed a FIST team in every ground maneuver company, but not in the attack helicopter company. (See "Divarty Aviation," March 1979, ***Aviation Digest***, and "FIST Takes To The Air," April 1979, ***Aviation Digest***.)

In response to these and other problems, the Close Support Study Group II was convened by the Field Artillery School during 1979, with representation from the Infantry School, Ft. Benning, GA; the Armor School, Ft. Knox, KY; the Signal School, Ft. Gordon, GA; and the Aviation School, Ft. Rucker, AL. CSSG II examined each of the current fire support organizations within a brigade size element (armor, armored cavalry, mechanized infantry, infantry, airborne, air assault) to determine the optimum organizational structure, tactics and equipment to meet fire support requirements. One area specifically examined was the need for fire support organizations to support air maneuver units (air cavalry troops and attack helicopter companies). The recommendations of the CSSG II study were approved by the TRADOC commander on 18 January 1980 and published in TC 6-20-3 (Draft) which will replace TC 6-20-10, "FIST."

One of these recommendations of significant importance to Army Aviation is the assignment of a fire support section to every attack helicopter company and air cavalry troop. Currently, air cavalry squadrons and attack helicopter battalions have FSOs to assist with fire planning and fire support coordination. However, at company/troop levels, the burden of fire support planning falls on the commanders. The CSSG II felt that this manning was consistent neither with the FIST concept nor with the method of operation required of attack helicopter organizations by FM 17-50, "Attack Helicopter Operations."

The latter reflects the view that attack helicopter units will operate as maneuver systems in a tactical environment. The most probable

FIGURE 2: AERIAL MANEUVER FIRE SUPPORT SECTION



employment method for attack helicopters attached to a division would be to place the attack helicopter companies OPCON to a brigade. In turn, the brigade commander could use the AHC to thicken the defense in the area of the enemy's main attack; to reinforce a maneuver battalion in an economy of force role; or to defend its own sector, understanding that while the attack helicopter company cannot physically occupy terrain, it can certainly dominate it.

Whichever mission is assigned, the attack helicopter company commander must accomplish at least eight separate specific tasks:

- Detect, identify and attack the enemy at maximum possible distances from the friendly main body to prevent engagement of the main body under adverse conditions.
- Conduct battlefield movement only along covered and concealed avenues, making use of terrain to avoid enemy long-range detection and engagement.
- Provide fire from overwatching positions to reduce the chance maneuvering forces can be seen and engaged by enemy.
- Employ artillery and other indirect fires to suppress, neutralize or destroy enemy forces.
- Operate in darkness or other periods of low visibility to reduce range and accuracy of enemy observation and fire.
- Control and distribute fires to kill targets rapidly and save ammunition to engage the next attacking echelon.
- Direct and report the battlefield with precision, discipline, speed and security to win the battle quickly, unimpeded by enemy countermeasures.
- Use the proper mix of ammunition and fuel to reduce the need for resupply, but plan to ensure prompt resupply when needed.

The eight tasks above constitute a tremendous responsibility for attack helicopter company commanders when coupled with the administrative responsibility of managing the units.

Since the employment of artillery and other indirect fire is one of these eight priorities, CSSG II sought to devise a way to ease the AHC commander's burden. The study began by identifying the fire support requirements of the attack helicopter company commander, which include:

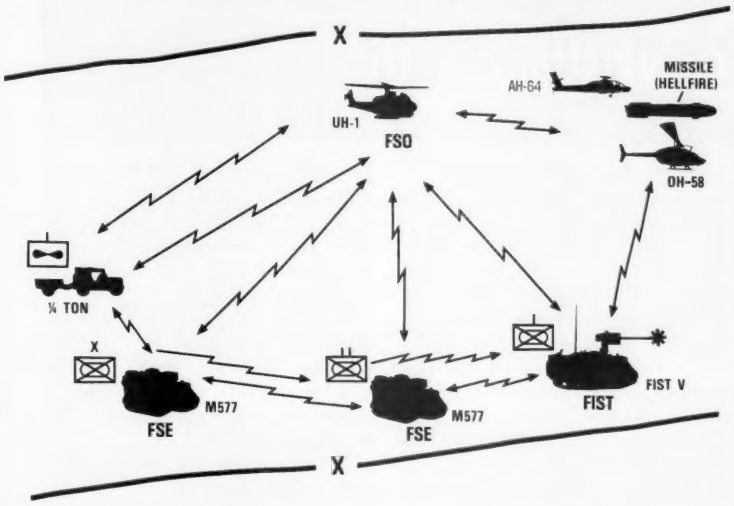
- Suppression of enemy air de-
- Close air support.
- Indirect fire support.
- Integration of observers (air and ground).

To satisfy these requirements, CSSG II considered recommending that one of the commissioned aviator positions in each AHC be manned by a Field Artillery aviator who would be given an additional duty as FSO for the company. This recommendation was rejected since this would cause personnel manning problems and because there could be no assurance that the position would be filled by a Field Artillery aviator. Instead, CSSG II finally recommended that each AHC have an attached FSS to perform fire support planning and coordination (figure 1).

The planned FSS will consist of a Field Artillery captain (nonaviator), an E7 fire support noncommissioned officer and an E4 fire support specialist. The FSS will be located in the company TOC. The FSO also may be located in the jump CP with the AHC commander or the company operations offcer if necessary, depending on the communications problem. In either case, the FSO will assist the commander in planning for fire support and in ensuring continuous fire support coordination between the AHC, battalion FSE, brigade FSE, direct support artillery and any field artillery aerial observers in the area (figure 2).

Provision of an FSS to the attack helicopter company carries with it a host of benefits. For example, it will no longer be necessary for the scout helicopter or team leader to shift radio frequencies from the command net to the artillery net to request fire support. Nor will it be essential for them to keep abreast of what fire support means are available at any given time. Instead, the attack team leader need only request fire support through his command

FIGURE 3: GROUND DESIGNATION FOR HELLFIRE



net. The FSS will then process the call for fire through the normal artillery channels, via the fire support elements in the immediate area. Through coordination with those same elements, the FSS also will stay abreast of the tactical situation and will know which fire support means are available to furnish the desired support. If fires must be adjusted, the FSS can request that aerial observers adjust fire, or the FSS can relay the shooting unit's radio frequency to the attack team leader, and he or his scout ships can adjust fire.

CSSG II also looked at how the FSS can support the attack helicopter company equipped with the HELLFIRE missile. HELLFIRE can, of course, be guided autonomously, by a scout ship equipped with a laser guidance system, or be guided by a ground designator located with the ground maneuver company FOs. The latter may be preferable in two situations:

- If enemy ADA is so strong that it cannot be suppressed, the AHC commander may prefer to use ground designation to avoid exposing his aircraft.
- If there are so many targets that they cannot adequately be serviced by the attack helicopters and scouts alone, the AHC commander can then ask for ground designators to assist.

In either situation, rather than the team leader or battle captain having to figure out whom to call for ground designation assistance, all he would have to do is request that assistance through the FSS. The attack helicopter company FSS, working in the field artillery communication net, would contact the appropriate FIST team (figure 3) and relay to the attack helicopter team the FM frequency to be used to contact the laser designator who will service the target.

Having the call for laser designation coordinated by the FSS takes pressure off the attack helicopter team leader, and he can devote more time to maneuvering his attack team. Recent combat tests also confirm that anything done to ease the scouts' workload significantly increases the efficiency of the attack helicopter company as a whole.

Another way the Field Artillery can support the attack helicopter companies is through the use of Field Artillery aerial observers. Ten FAAOs currently are assigned to each division artillery. For planning purposes, assuming an 80 percent daily aircraft availability, we can expect eight FAAOs to be available in the division sector. A typical assignment would be two FAAOs for each direct support artillery battalion and two to four for the general support artillery, depending on aircraft availability. If divarty is augmented by a corps artillery brigade, we might expect to see up to four additional FAAOs in the area.

FAAOs can assist in fire support planning, but they are primarily implementors of the fire support plan. Perhaps their most important contribution to the attack helicopter company will be to implement the AHC's SEAD plan. Coordinating through the attack helicopter company's FSS, who devised the SEAD plan, the FAAO can take much of the fire adjustment load off the scouts. The FAAO also can assist the scouts by acquiring SEAD targets and feeding the information to the attack helicopter company FSS so he can update his fire support plan.

Results of CSSG II were submitted to TRADOC by the Field Artillery School on 30 July 1980. The TRADOC commander approved the study recommendations and sent them to DA for approval and implementation. At this writing, DA is finalizing implementation plans. But the FSS may be added to the attack helicopter company TOE as early as fiscal year 1981. In the TOE Division 86, the three-man fire support section already has been assigned to each of the two attack helicopter battalions.

If we are to fight as a combined arms team, artillery and other fire support means must be made more responsive to *all* maneuver systems. With the implementation of the CSSG II recommendations, we will have moved a long way toward resolving a long-standing ambiguity in the relationship of fire support to attack aviation.

25TH CENTURY TODAY

DO S ARMY AVIATION entering the world of science fiction? Are the exotic devices of Buck Rogers and Star Wars a reality?

Perhaps. The work in laser weapons is right out of Buck's 25th Century. Miniature cameras and radios available rival Q's most ingenious devices. Computer capability almost equals R2D2 and C3PO.

Army Aviation has its own special scientific marvel—the night vision goggles (NVG). This night vision enhancement device is very effective. It has increased the nighttime capability of the aviator, but it has also increased the workload.

NVG capability allows a pilot to more readily identify an enemy target, avoid obstacles in the flightpath and navigate by terrain features in known areas. But, rapid visual transition from outside to inside the aircraft to gain aircraft status data is impossible and there is no R2D2 or C3PO yet available to provide that data. This problem is especially applicable to single-pilot missions.

Pilots must obtain attitude information from items in their flightpath, determine airspeed from their rate of closure on them and determine their altitude from the relative position of the aircraft to those items.

What does a pilot do for aircraft system information—fuel quantity, oil temperature or caution warning devices? Since the Army has yet to devise a soothing voiced computer, our aviator does without aircraft system information. A lot of trust and hope rests with the maintenance personnel and crewchief.

Most of our intrepid aviators manage to overcome this lack of data, especially in a training or well-known flight environment. But in night flight at nap-of-the-earth (NOE) level somewhere in the European theater where they are unfamiliar with the terrain, there are problems.

A fog bank envelopes the aircraft—it's a whiteout or even a brownout and with no R2D2 or C3PO to help. Suddenly, the pilot has lost all visual contact with the outside world. The eyes' slow adaptation to changes of light intensities at night and the NVG prevent the effective transition to instrument flight. All the pilot sees is red (anger) and green (NVG). This could cost the pilot a high price—a life.

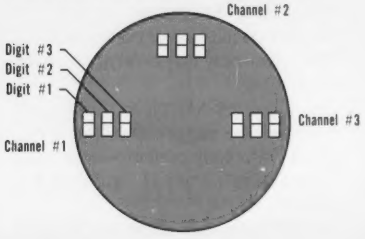
Sure, the NVG have helped in night flight and made target identification easier, but the visual workload has increased while information needed to accommodate this increase has declined.

The U.S. Army Aeromedical Research Laboratory at Ft. Rucker, AL, is working on these visual problems. The results of our work in this area combined with recent technological advances have led to some unique capabilities—not quite R2D2, but getting close.

Suppose we go back into the fog bank, but instead of seeing red and green, our pilot concentrates on a head-up display presented at the very edge of the NVG field of view. There within the visual field is flight information on attitude, airspeed, heading and altitude. The pilot also knows that the aircraft system infor-

FIGURE 1 (left): Photograph through AN/-PVS-5 with display operating. The picture of the helicopter is superimposed on an actual picture taken through the NVG with the display device mounted and operating during laboratory bench testing. This illustrates a flight sighting

FIGURE 2 (below): Optical chip placement



Staff Sergeant
Ronald D. Cisco
U.S. Army Aeromedical
Research Laboratory
Fort Rucker, AL

mation is being monitored electronically and any sudden changes will trigger a caution or warning display within the NVG field of view. Sound impossible?

Take a look at figure 1. This is an actual photograph taken through the NVG lens showing airspeed, heading and altitude displayed at the edge of the pilot's field of view.

The concept of displaying critical aircraft information to the pilot wearing the NVG began about 2 years ago. In the initial trials, the pilot wore a miniature optical chip glued to the lens of an ordinary pair of eyeglasses. Through this chip the airspeed was presented to the pilot. We found accurate airspeed could be maintained using the device and it did not interfere with the pilot's normal visual workload.

The next step was to adapt the display technique to the NVG without modification to the goggles and then to evaluate the concept under actual flight conditions.

Figure 2 illustrates the placement of the aircraft information on the NVG's field of view. Each information area has three display parts consisting of a subminiature digit. This allows us to present information to a value of 999. Since the evaluation was performed at terrain or NOE level, altitude never exceeded that value (3 digits) and could be displayed for the pilot.

Because of funding restraints and the need to expedite evaluation of the concept, airspeed, heading and altitude were displayed at the 9, 12 and 3 o'clock positions. This arrangement also minimized training as it is the same basic arrangement as the instrument arrangement of our UH-1H Huey research aircraft.

Figure 3 illustrates the entire package necessary for displaying the aircraft information to the pilot. From left to right are a testing device, electronic display driving package and aircraft interface package. In the foreground are the NVG with the display device to the right. Total weight of the display is 2 ounces. Total weight of the entire package is under 10 pounds. It is estimated that a production system, including all components, would weigh less than 6 pounds.

The next logical question was, how did it help the pilot? To find an answer we had several subject pilots wear just the NVG and fly a prescribed flight profile. We asked them to maintain airspeed, altitude and heading as close to the given parameters as possible. Each pilot found it difficult to do that and also navigate the required course without assistance from the safety pilot.

We then gave them the NVG with the head-up display and again asked them to fly the same profile and maintain the parameters given. Not only did they maintain the parameters, they maintained them to a degree much greater than our expectations. Assistance was still required for attitude, trim and aircraft system information.

Each subject pilot that flew with the display device, without exception, said that attitude and trim information were essential for a complete display and that a caution or warning device would be beneficial. Personnel familiar with the concept and those who flew with the NVG and display for demonstration purposes made similar comments.

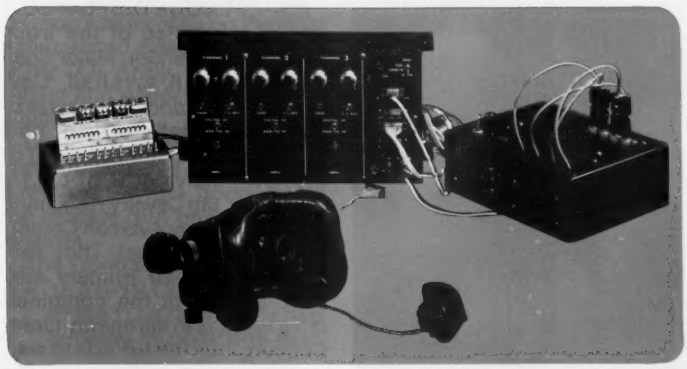
These comments support research results that attitude, airspeed, altitude, heading, trim and caution information are essential for safe flight regardless of flight environment, profile or maneuver.

Consequently, our next step is to add a dynamic attitude indicator, trim information and caution warning with the current display information. Then, more evaluations.

Our evaluations have already shown pilots can accommodate digitally presented information superimposed on the NVG's field of view. The eventual availability and use of digital information in the NVG will lead to reduced visual workload, and most importantly, safer flight during all types of flight profiles and maneuvers.

So move over, Buck Rogers, R2D2 and C3PO. Army aviators are moving into your futuristic world.

FIGURE 3: AN/PVS-5 night vision goggles with subminiature head-up display device



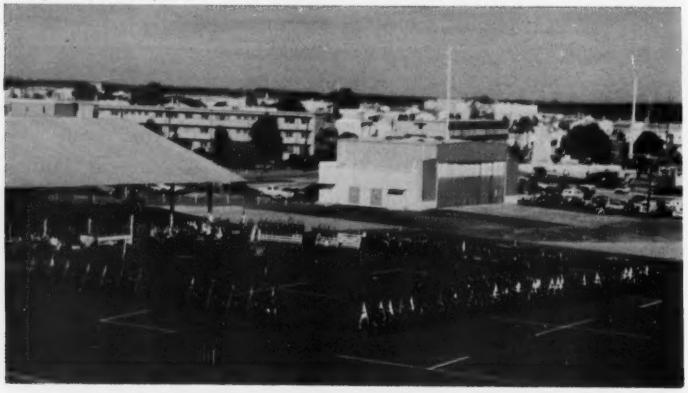
The opinions expressed in this article are those of the author and do not necessarily reflect the views of the Department of Defense.

Helen A. McCollough
Aviation Digest Staff

Ghost Riders in the Sky

photographs by SP4 John J. Senecal and SP4 Don Chance

photograph by SP4 Gary Dahn



A PLAQUE DISPLAYED in the office of the troop commander, Major Charles R. Poulton II, says it all, *"Cavalry is not a branch it's a state of mind."* And that's exactly how the members (Ghost Riders) of the newly activated C Troop, 1st Squadron, 6th Cavalry Regiment, at the U.S. Army Aviation Center, Ft. Rucker, AL, feel. They recognize that their primary mission, as part of the combined arms team, is to kill enemy tanks. Concurrently the troop is to support the Aviation Center in the

areas of training, and in the testing of doctrine, tactics and equipment.

It is not difficult to understand the esprit de corps of C Troop's Soldiers, if you look back through the 6th Cavalry's long, glorious history. They feel the same about the Cavalry as their predecessors did when they participated in the following campaigns many years ago after organizing in 1861:

- Civil War
- Spanish-American War
- China Relief Expedition
- World War I
- World War II

Activation of C Troop on 1 December 1980 (see Reporting Final, *Aviation Digest,* August 1980) announced the beginning of reactivation of the 1st Squadron, 6th Cavalry Regiment, 6th Cavalry Brigade (Air Combat) as an operational unit for the third time since 1861. The brigade's headquarters is at Ft. Hood, TX. (See pages 1 through 19, January 1980, *Aviation Digest.)*

Troop C is the first of three troops that will be activated in the next 3 to 6 years. Department of the Army will announce the other dates and troop locations.

Some of the Soldiers already stationed at the Aviation Center were reassigned to C Troop, while others came from as far away as Germany. The expertise of these Soldiers serves to justify *C Troop's claim of being the most experienced aviation attack unit in the U.S. Army.* And, they're willing and eager to accept the challenge.

There are 18 officers, 38 warrant officers and 167 enlisted authorized in the troop. All of the officers (but one) are rated aviators.

The Troop's 33 aircraft include:

- 18 AH-1S Cobras with tank-killing TOW (tube-launched, optically-tracked, wire-guided) missiles
- 12 OH-58 Kiowas, scouts that are always first out, last in and ready to answer a call
- 3 UH-1H Hueys that have been the Army's workhorse for nearly 2 decades

The location of C Troop at Ft. Rucker received command emphasis from the last three commanding generals at the Aviation Center. They felt that a tactical combat unit should be located at the "Home of Army Aviation" because:

- The expertise is there
- It will be cost-effective
- Concepts should be tested before becoming doctrine

The 1st Aviation Brigade is C Troop's parent unit at Ft. Rucker, and Guthrie Field is its base of operation. The Troop will remain at Ft. Rucker except in event of a national emergency when it would rejoin the 6th Cavalry Brigade for possible deployment.

The Aviation Center's facilities will be strained if the Ghost Riders do all of their training at Ft. Rucker. Therefore, C Troop hopes to be involved in some of the readiness command joint exercises near Eglin Air Force Base, FL, to ensure its readiness for deployment on short notice. Also some of its more advanced training will be conducted in Georgia (near Fts. Benning and Stewart) and at Camp Blanding, FL.

The morale of the Troop is high. Its Soldiers are dedicated to maintaining and enhancing the Cavalry's original tradition. Their goals are:

- To successfully accomplish the training standards of the Army Training and Evaluation Program (ARTEP)
- To become combat-ready
- To maintain that combat-ready posture at all times

Ghost Riders at Ft. Rucker wear the 6th Cavalry Brigade patch with pride, and they're pleased to be located at the "Home of Army Aviation."

photograph by SP4 John J. Senecal

"OUT I WENT!"

JAMES TOBIN declares he had a few seconds of euphoria while on a flight 3 December 1980 in an Army U-21 Ute—which is unusual because at the time he was hanging with one hand on a rope railing outside the airplane that was flying about 200 knots at 9,000 feet above the ground!

The civilian pilot for the Army Armament Research and Development Command (ARRADCOM), Dover, NJ, had just fallen out of the U-21; so considering the alternatives had he not caught hold of that rope, perhaps his feeling of well-being is understandable.

"What a way to start a job" was the observation Mr. Tobin made later, since the momentous flight occurred on his first day of work with ARRADCOM. He had separated from the service a few days earlier, after having logged more than 3,000 hours during the previous 10 years as an Army aviator.

He and his copilot, Robert Pearce, were en route to Aberdeen Proving Ground, MD, with a shipment of small arms from ARRADCOM. The plane had just reached cruising altitude when a red cockpit light flashed on. This indicated that the retractable exit-stairway door, located behind the cockpit on the underbelly of the fuselage, was ajar.

"The door seemed locked," said Mr. Tobin, "but I jiggled it and it popped open. Out I went. If I hadn't instinctively tightened my grip with my left hand on the door handle, it would probably not have pulled me out."

As soon as he was outside the airplane, the wind pushed his free right arm around and up against his back, breaking the arm. His left hand ripped off the handle and miraculously caught the rope railing of the now folded-out-and-down exit stairway.

"For a split second I had hold of nothing. I can't really remember what happened, but my heart probably kicked off four extra ones. I grabbed hold of the rope and the wind streamlined my body so I was being dragged parallel to the fuselage."

Meanwhile, Mr. Pearce realized that Mr. Tobin had fallen outside the aircraft but was somehow hanging on.

Not able to leave the cockpit—there was no automatic pilot—Mr. Pearce slowed the craft down and contacted air traffic controllers who directed him to Solberg Airport, 20 miles southwest of Morristown, NJ. Slowing the U-21 down enabled Mr. Tobin to, in his words, "fight with all my remaining strength to get my leg up and inside the door opening."

He added, "I just knew I had to do it. Otherwise, I remember thinking, it was going to be a sad Christmas for my family.

"Once I had my foot in the door I knew I was not going to let myself fall."

Despite the 200-knot wind Mr. Tobin didn't feel cold and his arm didn't hurt for the 7 or more minutes he hung from the side of the descending plane. "My mind was elsewhere."

But when Mr. Tobin noticed that the now unfolded landing wheels were no lower than his head, he summoned just a little more strength to pull his body higher: "There was no way I was going to make it that far and then die. My head was off the ground by 4 or 5 inches, at least!"

He was still low enough to be pelted in the face and head by pebbles bouncing up from the runway.

Then the plane stopped and Mr. Tobin was too weak to move. "It was kind of a blur. People were coming out of nowhere," he recalled.

A paramedic team rushed him to a medical center in Somerville, NJ.

"The Lord must have something else planned for me. He didn't take me this time," Mr. Tobin said from his hospital bed. "My copilot was super; there were no bounces on the landing or anything."

After a few weeks of recovery Mr. Tobin plans to return to flying—but he also plans to stay inside the airplane!

NEVER AGAIN. A vow to never again exit through the door of a U-21 Ute when it is about 2 miles up in the air has been made by James Tobin, a civilian pilot with the Army Armament Research and Development Command, Dover, NJ. In December he fell out of the Ute when he tried to adjust the exit-stairway door but managed to hang on to the rope railing until the copilot landed the plane. Mr. Tobin figures that one experience is enough for a lifetime!

Michael Biddle
Public Affairs Office
U.S. Armament Research and Development Command
Dover, NJ

RWART:
The Commander's Friend

CW3 Charles Farmer
Department of Flight Training
Cairns Division
Fort Rucker, AL

HOW MANY TIMES have you signed into an aviation unit and found that days or perhaps weeks would pass before you were able to complete unit flight training?

Aviation commitments to field training exercises many times cause such delays. Or garrison activities (inprocessing, familiarization with new jobs, unit inspections) may require aviators to work in areas other than flying. A shortage of instrument flight examiners and instructor pilots, and a lack of available aircraft due to maintenance can also cause delays in "checking out" arriving aviators.

One way to eliminate that waiting time, which can rob a commander of resources needed to meet the unit's mission, is to have pilots attend the Rotary Wing Aviation Refresher Training, (RWART) course at the U.S. Army Aviation Center, Ft. Rucker, AL, before they report to their new assignments. In that 4-week course, they will receive refresher instruction needed to complete a UH-1H Huey contact flight evaluation and rotary wing instrument requalification and also become familiar with current tactical operations. It is conducted by the Rotary Wing Instrument Branch, Cairns Division, Department of Flight Training.

RWART students are aviators who are on orders from a nonflying to a flying assignment. They must be qualified in the UH-1 series aircraft, have been awarded an initial instrument rating and have a current flight physical which will not expire during the course.

A class starts each week with a quota for 12 students (that will drop to 10 this fiscal year). Selection for attendance is made by the Military Personnel Center at Department of the Army and persons can make application for one of the slots through their branch.

The first five flight periods of RWART are spent in the contact phase, reestablishing currency in the UH-1 helicopter. The student will refine basic flying skills to include preflight check, hovering flight, normal takeoffs and landings and emergency procedures. Supplemental training in engine starts, runups, shutdowns and various emergencies is practiced in the UH-1 cockpit procedural trainer (2C35). The contact checkride, conducted in accordance with the appropriate aircrew training manual (ATM), completes the flight portion of this phase. Its academics are self-paced, sound-on-slide presentations supplemented by programed texts.

With reference to the academics, a diagnostic examination is given for aircraft systems and for instrument flight rules procedures and regulations. A satisfactory score on that excuses a student from classes in a specific subject area.

In the instrument phase there are eight flight periods in the UH-1 flight simulator (UH1FS), three in the aircraft plus the instrument checkride. The program of instruction includes individual attention in basic and advanced instruments in the simulator. Aviators also receive an intensive review in flight planning, including evaluation of notices to airmen and determination of weather conditions suitable for flight; and they are required to make the appropriate response to more than 100 emergencies and precautionary measures programed into the simulator.

After the flight simulator periods of the instrument phase, students move to the flight line for three instrument training flights prior to the instrument checkride. The instrument evaluation is administered in accordance with the ATM and applicable Army regulations. Academic subjects taught through programed texts and individual instruction include all precision and nonprecision approaches.

Tactical instrument preflight and flight planning are also included in the program, together with interpretation of regulations. All RWART attendees are afforded the opportunity during the fourth week of training to complete the Army Aviation Annual Written Examination.

The last phase is designed to familiarize students with the skills and techniques necessary to operate a helicopter in a tactical high threat environment at all altitudes. Using the aircraft for three periods, they practice current terrain flight maneuvers, procedures and navigation.

RWART instructors are reputed to be some of the best qualified and most proficient in Army Aviation. That reputation is based on the fact that each instructor maintains proficiency in contact, tactics/terrain flying procedures and instrument flight procedures, and teaches those subjects on a continuing basis. Additionally, they are trained in methods of instruction and use of night vision goggles, and most are qualified instrument flight examiners.

Almost 2,000 aviators have completed the Rotary Wing Aviator Refresher Training Course since its inception at Ft. Rucker in April 1977; and they have gone to new assignments where little or no additional pilot training had to be given them. That aids in mission accomplishment as well as allowing the field commander's flight examiners and instructor pilots to spend more time on continuation flight training programs in the unit.

The ideal situation would be to have all Army aviators who need refresher training to come to the Army Aviation Center for RWART so they would be combat-ready when reporting to a new flying assignment.

FORSCOM FLYOFF RESULTS

CAPTAIN STEPHEN E. Kee and Chief Warrant Officer, CW2, George D. Chrest of D Troop, 1st Squadron, 9th Cavalry, 1st Cavalry Division, flying an OH-58 Kiowa last month at Ft. Hood, TX, won the U.S. Army Forces Command (FORSCOM) Helicopter Competition.

The winners along with the next seven best crews represented FORSCOM in the Armywide competition at Ft. Rucker, AL, from the 9th to 13th of this month (see outside back cover). The other seven in the order they placed in the FORSCOM competition were:

- ☐ **CW2 Ben VanEtten and CW2 Alan Porter, John F. Kennedy Flight Detachment, U.S. Army Center for Military Assistance, Ft. Bragg, NC.**
- ☐ **CW3 John T. Bailey and WO1 Jim C. Corbitt, B Troop, 7th Squadron, 17th Cavalry, 6th Cavalry Brigade (Air Combat), Ft. Hood, TX.**
- ☐ **CW2 Robbie D. Robinette and CW2 Ronald C. Whetstone, D Company, 502d Combat Aviation Battalion, 2d Armored Division, Ft. Hood, TX.**
- ☐ **CW2 Dennis D. Ladd and WO1 Charles M. Marshall, Headquarters and Headquarters Company (HHC) 2d Brigade, 101st Airborne Division, Ft. Campbell, KY.**
- ☐ **CW2 Scott E. Berrier and WO1 Robert E. McConnell, HHC, 2d Brigade, 101st Airborne Division, Ft. Campbell, KY.**
- ☐ **CPT Richard S. Kenney and CW3 Hugh J. Brown, D Troop, 2d Squadron, 9th Cavalry, Hunter Army Airfield, Ft. Stewart, GA.**
- ☐ **CW3 Billie R. Ellison and CW3 William J. Hunter Jr., 114th Aviation Company, Republic of Panama.**

photograph by SP5 Juan A. Melendez

WINNING FORM. Captain Stephen Kee keeps a steady hand on the controls as his teammate, CW2 George Chrest, observes boundary markers as they fly their OH-58 to 1st place in the 1981 U.S. Forces Command Helicopter Competition

PEARL'S

Personal Equipment And Rescue/survival Lowdown

Reader Reaction

We invariably receive a myriad of responses to our PEARL articles, most of which are positive in nature, some which serve to correct our mistakes, others which help to update and enlighten us, and, inevitably, some which are negative in nature. Well, it seems that one of our recent articles (see PEARL, November 1980, "Questions and Answers") has evoked quite a few responses of the latter variety. This particular article concerned a question about an individual who refused to wear a standard-issue olive drab SPH-4 flight helmet and insisted on wearing an SPH-4 that he had had painted bright red. Our rather terse rejoinder stated the requirement for an "approved flight helmet" and even listed the appropriate references specifying the proper color for the SPH-4. We thought that this article might help alleviate one of the serious problems with aviation life support equipment (ALSE) in the Army, that being the lack of standardization and uniformity of ALSE. We certainly did not expect negative reactions to such a straightforward article.

But, alas, we were wrong!

We received calls claiming that we were singling out Department of the Army Civilians (DACs). We received calls claiming that we were attempting to ruin the esprit de corps of those units who like to have "distinctive" helmets. Further, we received calls from several irate individuals claiming that the article pertained to them personally. First, the fact that the article singled out a DAC was a matter of pure happenstance. Second, there are many units having a lot of esprit de corps *without* having to use nonstandard equipment. Third, those individuals who thought the article referred to them personally are obviously not adhering to regulations themselves. Those individuals who called are not even physically located within 1,000 miles of the individual about whom the article was actually written.

The purpose of PEARL is to keep everyone in the Army Aviation community informed of changes or new developments in the areas of life support equipment, survival techniques and rescue procedures; to make suggestions, answer questions or clarify policy pertaining to those areas; and to help correct problems or irregularities in the field. Anything we say or do is said or done only with the best interests of the Army aviator in mind. If we become aware of a situation where someone is doing something that they shouldn't be doing, or using equipment that they shouldn't be using, or violating regulations, then it is our obligation to bring that situation to light for the purpose of effecting corrective action. This we will continue to do. If it is true that you are offended by an article such as the one referred to above, where we chastise someone who is unquestionably in violation of existing regulations, then it is logical to assume that you also must be in violation of those same regulations. If that is in fact the case, then the only thing that you really have grounds for is changing *your* policy.

The Continuing Importance Of ALSE

For a long time many people have been selling life support equipment short, but when those same people are faced with a survival situation, ALSE immediately takes on a new look. We were recently reviewing past issues of ***Aviation Digest*** when we came across two interesting articles which called attention to the importance of ALSE. The first, entitled "Missile! Missile!

If you have a question about personal equipment or rescue/survival gear, write PEARL, DARCOM, ATTN: DRCPO-ALSE, 4300 Goodfellow Blvd., St. Louis, MO 63120 or call AUTOVON 693-3307 or Commercial 314-263-3307

Debbie Fuentes photograph by Tom Greene

Missile!," appeared in the April 1975 edition of the *Digest*. The following passage is excerpted from that article:

As we left the area in the C&C bird, we were taking fire. We headed toward an airfield where we changed aircraft and were taken directly to the hospital. McKennty was stitched up and I was treated for burns. After this experience, my belief in the value of life support equipment has been reconfirmed. I received second- and third-degree burns on my left arm, shoulder and side and on the back of my neck. As a point of interest, had my Nomex collar been up, I would not have received any burns on the back of my neck.

The second article of interest also appeared in the April 1975 edition of the *Aviation Digest*. It was written by LTC Charles A. Lehman and is entitled "POWs and Life Support Equipment." The paragraph which follows sums up the entire situation with regard to ALSE:

Although we normally think of life support or survival equipment as serving to get our crewmembers home as soon as possible after a catastrophic airborne emergency, the returnee reports show another facet. Even when the evasion attempt is unsuccessful, life support and survival equipment can help keep the crewman in the best possible shape to withstand the rigors of capture. In the case of the radio and other signals, it can also provide a great psychological boost during a most trying experience. The extreme consequences of even a small failure rate in life support or survival equipment are highlighted in a combat environment.

What's AR 40-61?

Diphenoxylate Hydrochloride and Atropine Sulfate Tablets (national stock number (NSN) 6505-00-118-1914) could really save your day if you ever find yourself in a survival situation. Well, I guess we have kept you in suspense long enough, because these tablets are more commonly known as antidiarrhea tablets, but I guess all of you knew that anyway.

The tablets are part of your survival kit, individual tropical (NSN 6545-00-782-6412). This is the first aid kit which is a component of your survival kit, individual, SRU-21/P, vest type (NSN 8465-00-177-4819).

A problem arises because the antidiarrhea tablets are a controlled drug and are not issued as part of your SRU-21/P survival vest. Great difficulty usually

PEARL'S

is experienced obtaining these tablets from your medical support facilities.

You are authorized to have the antidiarrhea tablets, and they should be part of your SRU-21/P survival vest on every flight that you make. Many of you have found that surviving a bout with diarrhea is easier than obtaining the antidiarrhea tablets.

So what's AR 40-61, "Medical Logistics Policies and Procedures"? This is the regulation that you should take to your medical support facility when you attempt to obtain your antidiarrhea tablets. Page 3-28, paragraph 7(a) reads as follows:

(a) DEA designated controlled substances will be issued to the pharmacy of the hospital for dispensing to patients, wards, clinics and other using agencies of the hospital. These items will be issued to other on-post and off-post activities only when authorized by the medical facility commander, based on proper medical staffing and demonstrated need for these items. Records will be maintained at using activities in accordance with AR 40-2. (Reprinted from PEARL, August 1978)

New Track For SPH-4

The Defense Personnel Support Center (DPSC) has informed us that it is now supplying MILSTRIP requisitions for the track, visor, interchangeable, used on the helmet, flyer's, type SPH-4. This track is a replacement for the current tracks, visor, left and right, NSNs 8415-00-410-4669 and 8415-00-410-4668, respectively. The new track can be ordered from S9T at a cost of $.63 each under NSN 8415-01-083-8372.

Safety Boot

There is a safety boot currently in the Army inventory which is both available and suitable for use by aircrewmembers. This is a 10-inch high lace-up boot with steel toe and shank. It also is fuel and water resistant. This safety boot is listed in SB 700-20 and CTA 50-90 under LIN CO 8735. It is available in sizes 5N through 14 XW and can be ordered from S9T at a cost of $27.67 per pair, using stock numbers starting with NSN 8430-00-624-2151 (size 5N). (Thanks to CW3 James K. West, MSARNG, Tupelo, MS, for this info.)

Questions And Answers

We are in the process of upgrading our ALSE maintenance program and ensuring that we have the proper manuals on hand for all of our equipment. We can't seem to identify the proper reference to use for maintaining the headset-microphone H-157/AIC, which we use in our U-21 Ute aircraft. Could you please provide us with the proper technical manual (TM) or technical order (TO) number to use for maintaining this item of equipment? (SGT William Graham, DPT Aviation, Ft. Lewis, WA)

To the best of our knowledge, no Army TM or Air Force TO exists for this item of equipment. The only references we know of are the Military Specification Sheet, MIL-H-83511/2, which would be of little or no value to you; and the instruction sheet which is included with each new H-157/AIC headset-microphone. This latter reference is excellent and gives detailed instructions for the operation and maintenance of this item of equipment. If you don't happen to have a new headset with instruction sheet, or if you wish to obtain more instruction sheets, they can be ordered from the Roanwell Corporation, 180 Varick Street, New York, NY 10014, under Part No. 15353 Rev. C. Incidentally, we had previously provided some information about the H-157/AIC headset-microphone in a February 1980 PEARL article entitled "The Elusive Microphone." This information also may be of some use to you.

Recently our units received the orange fluorescent marking tape for use on the SPH-4 flight helmet. A complaint has been made by AH-1 Cobra aviators that this tape causes a reflection on the canopy which hinders the vision of the aviator in the back seat. Is this the authorized tape for the SPH-4? If it is, have any other complaints come from the field concerning this problem? (CW3 Arthur J. Miskimon, 25th Inf Div, Schofield Barracks, HI)

The fluorescent orange tape you described is the correct tape to use when marking the SPH-4 helmet and is the one prescribed by TM 10-8415-206-13. Similar complaints from other AH-1 aviators have surfaced in the past, and the accepted solution is for AH-1 personnel *not* to mark their helmets with this tape if they feel that it would create a vision hazard. We certainly encourage all aviators to mark their helmets in accordance with the TM, *however AH-1 aviators are the exception.* Remember that marking the helmets is not a requirement, but rather an option, at the discretion of the major commander (see para 3-21, TM 10-8415-206-13).

The Aviation Digest welcomes readers to submit photography for use in our PEARL'S articles

Refueling Aircraft at Home or Away

EVER TAKEN a bath in JP4? Well, one Huey pilot who did found out the hard way that it can be more than just a frightening experience.

This particular pilot was on the return leg of a cross-country flight that required several scheduled refueling stops. One of the stops was at an Air Force base—the home of a B-52 wing. When the UH-1 crew landed at the base, they parked the helicopter in the transient area and, after a short wait, the Air Force refueling truck was pulled up next to the Huey. The driver connected the ground cables to the static ground, unreeled the hose, and handed the nozzle to one of the pilots. Neither the pilot nor the truck driver considered the situation to be the least bit unusual, as both had refueled aircraft numerous times before. The point they didn't consider was that since it takes several thousand pounds of fuel for a B-52, a high pressure refueling system was being used.

When the pilot squeezed the fuel handle, JP4 roared out of the nozzle, drenching him in jet fuel. He released the handle immediately, but the damage was done. Since this was a 1-day cross-country flight, the pilot did not have another suit of Nomex. Under ordinary circumstances, this would have prompted the pilot to delay his flight long enough to shower and wash his flight suit. But like many of us, he was eager to get home and took off as soon as the helicopter was refueled. En route home, the pilot began to feel nauseous. By the time he reached home, the nausea had gotten much worse. He eventually began having convulsions from fuel absorption into his skin.

Although the pilot recovered, it's not an experience he cares to repeat. It's certain that the next time he refuels at an Air Force base, he'll make sure the fuel truck not only contains the right type of fuel but that it uses a low pressure system.

The Army is no more immune to mistakes than the other services. This was evident when an Air Force pilot landed at an Army airfield and requested that his C-121 be refueled with aviation gas. The C-121 crew didn't bother to confirm that the correct fuel was provided and the inevitable happened. Just after the pilot took off and became airborne, one of the engines failed. By the time he could make a go-around and land, a second engine failed and a third was on the brink of failing.

Several months later, a POL specialist at the same post inadvertently refueled a T-41 with JP4 instead of avgas. He later realized his mistake and reported the incident. Fortunately, no one had tried to fly the aircraft and it was defueled without incident. However, the airfield commander chose to give the POL specialist an Article 15. Although the commander had the authority to do so, I feel that he used poor judgment because of the impact it had on others who witnessed what happened when the individual admitted his mistake.

As aviators and crewmembers, one of our greatest satisfactions is doing our jobs well. However, most of us don't include refueling aircraft as one of our all-time favorite duties and try to avoid it like the plague. But at home or away, it's our obligation to insure our aircraft are being serviced with the proper fuel.

This article was written from a lesson plan prepared by the author while he was attending the Aviation Safety Officer Course. The views expressed in this article are those of the author and not necessarily those of the Department of the Army or the Army Safety Center.

CW3 Robert R. Atchison

Can do (ISM'S) can kill!

ALL TOO OFTEN, aviation as well as ground safety takes a back seat when it comes to mission accomplishment.

There appears to be a direct relationship between the pressure generated on a commander to get the mission accomplished as quickly and as efficiently as possible and the pressure that flows down the line to each and every soldier. The age-old adage of "can do" is loaded with immeasurable risk of damage to or loss of equipment, injury, and, potentially, death.

We are all aware that mission accomplishment is the ultimate goal; get there with the most, first, and best. It only takes one slip though, either mentally or physically, and the results are often painful and/or catastrophic. In these days of much greater complexity not only in sophisticated equipment and weaponry but of overall combined arms operations, the attitude that we "can do" before considering all of the ramifications before committing ourselves or troops must be put in proper perspective.

CW3 David M. Battle
4/498 Medical Co. (AA), Fort Jackson

First, in combat, we "will do" our mission. There must be no doubt of that! However, that's putting the situation into proper perspective, COMBAT! In pure training, as well as combat environments, we must consider many factors. Foremost among these are weather, fatigue, and equipment status. If a commander decides on the spur-of-the-moment that he "can do" the mission or perhaps just part of the mission without taking into consideration the factors that can and will influence the outcome of either the training or ultimately the combat goals and/or objectives, then someone's in for a rude awakening.

Everyone is usually anxious to please and hates to say no, especially to higher ups. We want the brass as well as the steel to know that we can do our job. However, if everyone on every level would just stop for a second and take a little closer look at the total situation, we would probably not come up with a reason why we *can't do*, but rather a much safer way that we *can do* the job, all the while preserving valuable resources and assets.

Being more closely associated with aviation than with any other branch except for some very challenging and educational time spent with an armored cav unit in Korea, I too have had that gnawing feeling in the pit of my stomach when we were considering taking off in marginal weather or with a radio that was operating kind of flaky or swimming a track in swift water, "legal" in every sense of the word. But is it really imperative that we "do" it right now or is there something that we "can do" a little better in a little different way? Our squadron commander (nonrated) was the epitome of a pro both in the air and on the ground. He put the word *effective* into combined arms! He always stressed the fact that if we lose one jeep, a track, or an aircraft,

injure or kill one soldier, then our ultimate victory would be that much less of a *total victory*. There cannot and must not be any compromise of people and equipment safety!

It's true. Everything runs downhill and especially when it comes to safety and total mission accomplishment. We are all responsible to each other to protect and defend each other, as well as our country and our hard assets, for without either of these, we have diluted our potential for success and total absolute victory. We are *all* charged with ensuring that the basics of commonsense and practical application are directed toward achieving our purpose, goals, and objectives. The strength we are after a mission both in troops and materiel will determine how quickly we can again react to the calls for fire.

Let's not let can do kill us . . . reserve that for the enemy! Safety in the air, on the ground, and in the water must never take a back seat!

Fifth International System Safety Conference

Denver will be the site of the Fifth International System Safety Conference in July 1981. The objective of the conference will be to provide a forum for safety professionals to exchange technical and managerial concepts, methods, and new developments in system safety.

The conference theme is "System Safety Throughout System Life." The need for system safety to play a key role in a product's life cycle has been long recognized by safety professionals. The conference will provide a unique opportunity for conferees to discuss and present this and other issues relating to system safety. Distinguished speakers from government and industry, as well as carefully organized workshops and technical sessions, are planned.

The conference will be held in Denver, Colorado, July 26-31, 1981, at The Brown Palace Hotel.

For further information, or for a copy of the preliminary program, contact the publicity office at (303) 977-1647, or write to 145 E. Costilla Avenue, Littleton, Colorado 80122.

REPORTING FINAL

Late News From Army Aviation Activities

FROM FORT RUCKER

AHIP Scout. The Army Helicopter Improvement Program (AHIP), which is designed to provide the Army with a near term scout helicopter, passed two major milestones on 9 January 1981. They were the formal Headquarters, Department of the Army approval of the AHIP required operational capability (ROC) document and release of a full scale engineering development request for proposal (RFP) to industry.

The ROC and RFP describe an aeroscout that is to be a modified existing inventory helicopter equipped with a mast mounted sight. The helicopter is to have TV and FLIR (forward looking infrared radar) day/night standoff sensors, a laser designator and rangefinder, and other capabilities for worldwide nap-of-the-earth operations against a variety of threats. Upon fielding in the mid-1980s, it will be employed with attack helicopter, air cavalry and Field Artillery units.

(TSM SCOUT HELICOPTER)

Flight Safety Awards. The Aviation Center, Cairns Division of the Department of Flight Training (DOFT), and 16 Aviation Center aviators recently were presented flight safety awards.

On behalf of the Aviation Center, Colonel Kenneth J. Burton, then director of training and doctrine, accepted a certificate signed by General Donn A. Starry, commanding general, U.S. Army Training and Doctrine Command, commending the post on its record-setting Class A mishap rate during fiscal year 1980. The Aviation Center posted a 0.27 mishap rate with no fatalities while flying 366,456 hours which were primarily training hours. It was the best record in 18 years of record keeping. The worldwide mishap rate for the year was 2.41.

A certificate was accepted on behalf of Cairns Division by Lieutenant Colonel Robert R. Parks, division commander. Cairns was cited for 100,000 accident-free flying hours from March 1979 to October 1980.

Aviators from Cairns, Hanchey and Lowe Divisions, DOFT, received individual Aviation Center Certificates of Achievement for completing from 1,000 to 14,000 accident-free flying hours (see photos).

photograph by SP4 Denise Starr

Flight Safety Awards (see story). Above: Front row from left—Chief Warrant Officers, CW3, Thomas C. Daley, 3,000 hours; James D. Lawrence, 4,000; Robert L. Miller, 3,000 hours; and Captain Jack A. Cook, 2,000. Second row from left—Chief Warrant Officers, CW3, William A. Tompkins, 4,000; Don E. Jewkes, 3,000; Philip T. Paulson, 2,000; and Captain Calvin O. Purdin, 1,000

Below: Front row from left—Conway O. Crane, 14,000 accident-free hours; and Chief Warrant Officers, CW3, Harold A. Laird Jr., 3,000; Theodore A. Matyjasik, 5,000; and William N. Nobles, 3,000. Second row from left—Chief Warrant Officer, CW4, Anthony L. Adkinson, 5,000; Captain Jesse S. Hunt, 5,000; Chief Warrant Officer, CW4, Merl R. Hawkins, 4,000; and Chief Warrant Officer, CW3, Luther W. Richardson, 3,000

photograph by SP4 Denise Starr

Graduation Speakers:

• Major General Joseph T. Palastra, commanding general, 5th Infantry Division (Mechanized), Ft. Polk, LA, told officer and warrant officer rotary wing graduates recently that as aviators they bear the burden of leadership in combat.

Saying that military planning calls for more and more leaders being placed in rear areas, General Palastra contended that aviators have an "edge" in demonstrating leadership.

"(You're) a throwback to an earlier warrior," said the U.S. Military Academy graduate. Since Army Aviation is envisioned to play a key defensive role in any possible conflict with an armor-oriented enemy, he said he expects Army aviators will be looked to for morale support by the troops on the ground.

• Major General Robert A. Sullivan, the Army's Chief of Public Affairs, warned graduates of officer, Europe/NATO and warrant officer rotary wing aviator classes to be ready should Army Aviation be used in retributions against terrorism. He said he was referring to remarks made by President Ronald Reagan promising "swift and effective retribution" against future terrorism involving Americans.

"I can think of no retribution that wouldn't include aviation, probably Army Aviation," said General Sullivan. **(USAAVNC-PAO)**

NGB Army Aviation Division. The National Guard Bureau conducted a State Army Aviation Officer (SAAO) Training Course at the National Guard Professional Education Center, Little Rock, AR, from 9 to 13 February 1981. The purpose of the course was to update full-time Army National Guard aviation program managers, who are responsible for managing about 30 percent of the Army's total aviation assets, on the current trends and future challenges of Army Aviation. Topics covered included development and management of aviation, safety, operations, training, standardization and aviation personnel programs within the Army National Guard aviation program.

In addition to the 53 SAAOs in attendance (including the Virgin Islands and Puerto Rico), two FORSCOM aviation managers and the ARNG-LNO from the USAAVNC attended the course. **(USAAVNC-DES)**

Talking About The Old Days. Two Army Aviators share their Vietnam experiences while resting on a UH-1 Huey helicopter, the same type aircraft they flew on medical evacuation missions when they were assigned together in 1970. The two are assigned together again at the Aviation Center, Ft. Rucker, and what makes the reunion special is that they are father and son. Chief Warrant Officer, CW4, Michael J. Novosel Sr., right, is the only Medal of Honor recipient (see January 1974 *Aviation Digest*, page 3) stationed at the Aviation Center. He completed his 40th year of military duty on 7 February 1981. Chief Warrant Officer, CW3, Michael J. Novosel Jr., is an instructor pilot at Lowe Division, Department of Flight Training while his father is assigned as safety officer, Directorate of Evaluation/Standardization

photograph by SP4 Denise Starr

REPORTING FINAL

Late News From Army Aviation Activities

FROM FORT EUSTIS

U.S. Army Transportation Corps Directory. The 1981 edition of the U.S. Army Transportation Corps Directory of Active/Retired Transportation Officers (Red Book) is now available. Cost of the book is $4.00 plus $.70 postage. Requests for copies of the book may be sent to: Transportation Corps Museum Foundation, P.O. Drawer D, Ft. Eustis, VA 23604.

The next printing will be 1983. Individuals not currently listed or retiring before 1983 who wish to be in the 1983 edition may submit their name, rank at time of retirement and current mailing address to the foundation. **(USATC-PAO)**

FROM KOREA

Engineers' Aviation Safety Award. Six years of accident-free flying were recognized recently when General John A. Wickham Jr., United States Forces Korea commander, presented the Department of the Army Aviation Accident Prevention Award of Excellence Plaque to the U.S. Army Engineer Far East District Aviation Section.

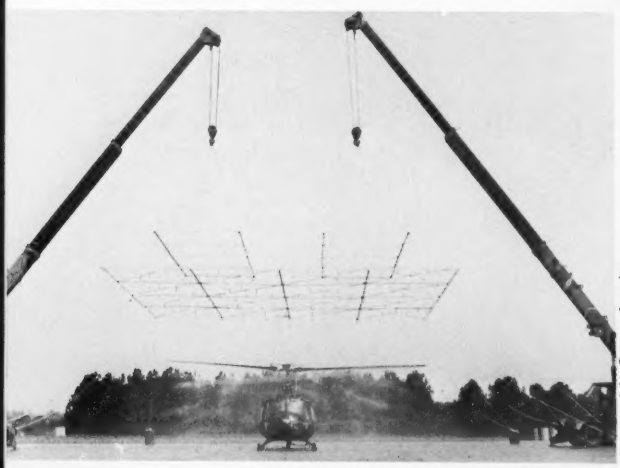
The award, presented during ceremonies at K-16 Airfield near Seoul, represented more than 4,000 hours of safe flying time logged by the section from 1 September 1974 to 31 December 1980.

Composed of two UH-1H Huey helicopters, four pilots and five enlisted Soldiers, the section is responsible for providing aviation support to the Far East Engineer District at construction sites and project offices throughout Korea. **(EIGHTH ARMY-PAO)**

Night Vision Goggles. Captain James F. Eversman tests the efficiency of the new variable density daylight training filters for night vision goggles. The filters simulate varying degrees of darkness during daylight for training purposes. The U.S. Army Aviation Development Test Activity, Ft. Rucker, AL, conducts this test for the U.S. Army Test and Evaluation Command

photograph by Luther Rickman

The "Rain Tree." A 50-foot square "rain tree" drenches a tied-down UH-1 Huey during a test of a chemical coating intended to prevent ice accumulation on helicopter rotor blades. The "rain tree" tests the coatings' resistance to erosion from rain under simulated conditions of up to 3 inches per hour. The U.S. Army Aviation Development Test Activity, Ft. Rucker, AL conducts this test for the U.S. Army Test and Evaluation Command



photograph by George Amerine

VIEWS FROM READERS

Editor:

Request this unit be placed on distribution for the *Aviation Digest*. As a recruiting organization, we are actively engaged in recruitment and processing of applicants for warrant officer flight training, and as such, we find the information in the *Aviation Digest* helpful.

MAJ Frank J. Leggio Jr.
Transportation Corps
USA Long Island District
Recruiting Command
Ft. Hamilton, NY 11252

• Official distribution of the *Aviation Digest* to Department of the Army agencies is handled under pinpoint distribution. It is necessary to submit DA Form 12-5 in accordance with instructions on that form in order to be placed on distribution.

Editor:

I am writing in reference to the article, "AH-1FS: One Step Closer to Reality," which appeared in the October 1980 issue of the *Aviation Digest*. I am an industrial engineering student at Ohio State University as well as a 2LT in the Ohio National Guard. Presently I am enrolled in a "training and simulation" course that deals particularly with aviation. I have chosen to do my term paper on flight simulators, more specifically those used by the U.S. Army. I would appreciate it greatly if you could forward to me the articles pertaining to synthetic flight trainers that were listed at the end of the AH-1FS article. I enjoy *Aviation Digest* very much, keep up the good work.

2LT Larry A. Hart
Ohio National Guard
Columbus, OH 43214

• The copies you requested are in the mail. Anyone else interested in obtaining copies of the flight simulator articles carried to date in the *Aviation Digest* should write Editor, *Aviation Digest*, P.O. Drawer P, Ft. Rucker, AL 36362. We will be happy to send them.

Editor:

I'm very interested in being an Army helicopter pilot after 2 years of college. I am now 16 years old and I like to gather information concerning Army Aviation whenever I can. I would like to know if you could send me three or four back issues of the *U.S. Army Aviation Digest*, and I would also like to know how I can get a subscription to the *Aviation Digest*. Thank you for your time!

Kurt B. Tschuor
2704 W. Twickingham Dr.
Muncie, IN 47304

• The back issues are in the mail. Annual private subscription can be obtained by sending a remittance of $20.00 ($25.00 for overseas subscribers) to Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402.

Some back issues of the *Aviation Digest* are available upon request. Write Editor, *Aviation Digest*, P.O. Drawer P, Ft. Rucker, AL 36362.

Editor:

Enclosed please find two tactical instrument approach plotters for a scale of 1:50,000 tactical map.

With the big push on tactical instrument approaches, it became a very trying time plotting all of the necessary safety and clearance zones required to execute the take-offs and en route flight approaches. One of the major problem areas was the amount of time required to execute all of the pre-mission planning.

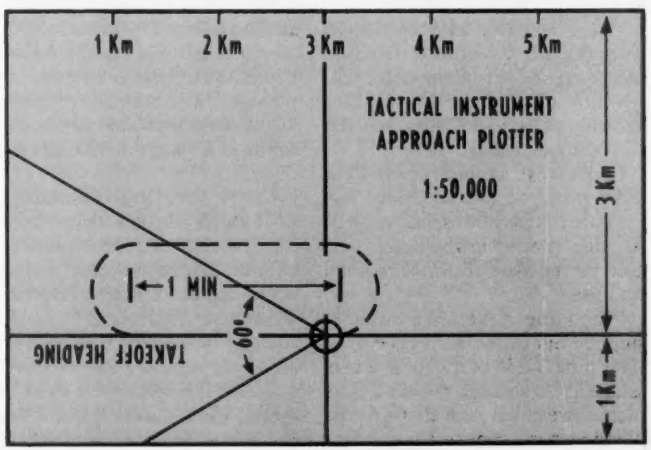
It became apparent that in a threat environment one would not have very much time for a lot of detailed planning and that some device was necessary to alleviate the cumbersome planning.

The tactical instrument approach plotter was very easy to design, and our local TASO did the rest.

The 14th Avn Bn here at Ft. Sill has been using the plotter with better than expected results. The SFTS personnel also have been giving plotters to National Guard personnel who use the simulator here at Ft. Sill. I have sent plotters to various units within the Army, with no adverse comments received.

It is not the answer to all our problems in tactical instrument flight planning, but another aid to make this flying more enjoyable.

CW3 William H. Whitehill
200th Aviation Company
14th Aviation Battalion
Ft. Sill, OK 73503



Betty Goodson
Staff Writer

Aerial lift assets for the desert operation were provided by UH-60 Black Hawks

Bright Star '81

U.S. Army helicopter crews received permission fr

WIND AND SAND are constants on the Egyptian Sahara Desert—but even those adverse conditions cannot erode Army Aviation's combat effectiveness.

Proof of that came in November from "Operation Bright Star '81," a 2-week overseas exercise of the Rapid Deployment Task Force and a concurrent exchange of military training between the United States and Egypt.

Army Aviation elements came from the 101st Airborne Division (Air Assault), Ft. Campbell, KY. Aircraft used were the OH-58C Kiowa, the AH-1S Cobra and the UH-60 Black Hawk.

Cairo West, a military airfield 16 miles from the city of Cairo, was the base of operations; and an area 30 miles further in the desert was used for the live-fire portions of the exercise.

When the American Soldiers stepped out of the Air Force C-5s, their first view of Egypt's sea of sand elicited almost a universal comment: awesome! And that first impression was intensified when they flew the traffic pattern because there was nothing but brown sand—no lights, cactus bushes, mountains—just a vast emptiness as far as vision could reach.

The lack of reference points made night flying difficult because, as Major William A. Glennon, commander of B Company, the Black Hawk unit, said, "You had the feeling of not moving at all since you couldn't see the ground and there was no horizon." He added, "This meant that for night flights in the desert, you had to use the same planning factors and have the same instruments available as you would for an IFR [instrument flight rules] flight."

Major Tom Roy, commander of C Troop, 2/17th Cavalry which had the gunship and reconnaissance aircraft, agreed the desert was overwhelming at all hours. "But those were first impressions," he said. "After a period, the body and mind adjusted; and by the end of the exercise, the pilots were more confident. Even during the short time we were there, we learned and relearned valuable lessons."

Some highlights of those lessons are:

- Contrary to its appearance, the Egyptian Sahara Desert is not flat. Rather, there are wadis deep enough to conceal a helicopter so the air cavalry and nap-of-the-earth missions could be performed.
- Night Hawk techniques learned at the Aviation Center, Ft. Rucker, AL, and Ft. Campbell proved invaluable. As one pilot said, "They kept us from buying the farm a lot of times."
- Dust signature was not a problem with the OH-58 but was with the Black Hawk and Cobra. They could overcome that somewhat, the Americans discovered, by making several approaches, throwing up a sand cloud at each to confuse the enemy as to the aircraft's exact location.
- Appropriate camouflage is a necessity in the desert. Because they were using the green coloration with which they had trained at Ft. Campbell for the European theater, American personnel and their equipment

on from the Egyptian government to conduct a fly-by at the Great Pyramids in Cairo during Operation Bright Star '81

stood out like the proverbial sore thumb against the desert brown.

- Desert flying is different, causing fatigue and eyestrain in a short time. This is a point of concern for commanders who must ensure adequate crew rest.
- The laser rangefinder is needed on the Cobra so the aircraft can be kept farther to the rear of operations. Desert terrain means an increase in exposure time, and this would be one way to reduce it.
- Conversely, visibility of the opposing force (which used the Soviet made BTR-50 armored personnel carrier as its primary assault vehicle) enabled the helicopters to navigate around armored columns and moving troops, thus avoiding contact.
- A communication problem came from the line-of-sight radios now used, and it is believed that UHF (ultra high frequency) equipment would be much better for desert operations because of the distances involved.
- Pathfinders are a very critical element in desert operations because of their work in setting up parking and landing zones, particularly with regard to selecting areas where the direction of the wind-blown sand would allow slingloads to be dropped.

The foregoing are only a few of the facts of desert life impressed on Army Aviation people in Egypt, and "impressed" is not of adequate strength to describe their introduction to the sand.

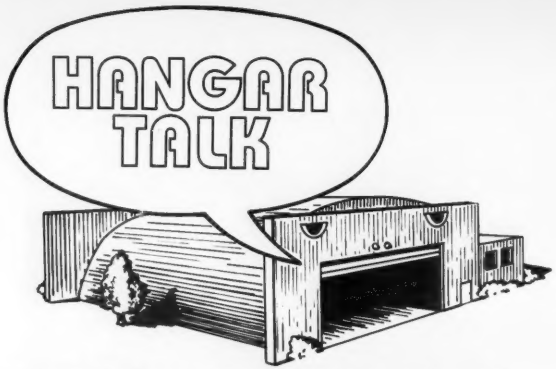
Constant 15 to 20 knot winds carried a fine mist of sand which invaded everything that was not sealed or adequately sheltered. That made life rather gritty for those responsible for maintenance and refueling, as well as for the cooks. Then when rotor blades stirred up the sand, the helicopters were subjected to a sandblasting effect which gummed up engines and weapons, eroded blades and jammed switches.

None are insurmountable problems, however, and Bright Star participants returned to Ft. Campbell with some suggestions as to how they can be overcome. Those suggestions will be scrutinized and necessary adjustments made in the 101st's training program.

"The thing we need to train on," Major Glennon said, "is the rapid deployment capability of the division. I think we did very well in this case, but we can do even better. One thing which was evident was that Army aviators need more instruction in the dismantling, loading and reassembling of their aircraft. Deployment is a labor intensive time for helicopter units, and there isn't time for anyone who doesn't know his job to find out how to do it."

Task organization to meet the moment's situation was also stressed in the exercise, just as it is in the division's training. An example of the exchange of services and equipment, of the combination of forces, was the air cav troop's receipt of motorcycles from the reconnaissance unit and lift assets from the Black Hawks.

A training exercise is designed to take the state of the art and show where adjustments are needed. Based on that premise, Operation Bright Star '81 was a success.



"Hangar Talk" is a quiz containing questions based on publications applicable to Army Aviation. The answers are at the bottom of the page. If you did not do well, perhaps you should get out the publication and look it over.

FM 1-50
FIXED WING FLIGHT
FM 1-51
ROTARY WING FLIGHT

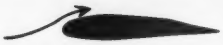
CW2 Gary R. Weiland
Directorate of Training Developments
U.S. Army Aviation Center
Fort Rucker, AL

1. An aircraft yaws about which axis?
   - A. Longitudinal
   - B. Lateral
   - C. Vertical

2. What is the phenomenon called that causes a single rotor helicopter to drift laterally to the right while hovering?
   - A. Translating tendency
   - B. Dissymmetry of lift
   - C. Transverse flow effect

3. What relationship must exist for an aircraft to maintain unaccelerated, straight and level flight?
   - A. Thrust greater than drag; lift greater than weight
   - B. Thrust equal to drag; lift equal to weight
   - C. Thrust greater than drag; lift equal to weight

4. According to Bernoulli's principle, what happens to air as it passes over a nonsymmetrical air foil?



   - A. Velocity decreases; static pressure decreases
   - B. Velocity increases; static pressure decreases
   - C. Velocity increases; dynamic pressure decreases

5. What causes an aerodynamic stall?
   - A. Excessive angle of attack
   - B. Excessive airspeed
   - C. Insufficient airspeed

6. To retain night vision capabilities it is recommended that oxygen be used for night flights above what pressure altitude (feet)?
   - A. 4,000
   - B. 5,000
   - C. 8,000

7. What do blue lights on an airfield indicate?
   - A. Sides of a usable landing area
   - B. End of a usable landing area
   - C. Taxiway lighting

8. How many minutes are required for the human eye to attain total night adaptation?
   - A. 15 to 20
   - B. 30 to 45
   - C. 45 to 60

9. Vector quantities are those that can be described using what factor(s)?
   - A. Size alone
   - B. Direction alone
   - C. Size and direction

10. What type drag is incurred as a result of production of lift?
    - A. Induced
    - B. Parasite
    - C. Interference

ANSWERS

1. C (FM 1-50, figure 14-3 and FM 1-51, page 32)
2. A (FM 1-51, page 2-34)
3. B (FM 1-50, para 8-2B and FM 1-51, page 2-23)
4. B (FM 1-50, para 4-3 and FM 1-51, page 2-3)
5. A (FM 1-50, para 5-2 and FM 1-51, page 2-49)
6. A (FM 1-50, para 22-6d and FM 1-51, page 6-7)
7. C (FM 1-50, para 22-7a and FM 1-51, page 6-55)
8. B (FM 1-50, para 22-6a and FM 1-51, page 6-5)
9. C (FM 1-50, para 3-4a and FM 1-51, page 2-5)
10. A (FM 1-50, para 7-2b and FM 1-51, page 2-20)

ON-THE-JOB TRAINING

THE AVIATION CENTER Training Analysis and Assistance Team (ACTAAT) visited 15 aviation and air traffic control battalions and 55 companies during 1980. (See the February 1980 ***Aviation Digest*** for information about the ACTAAT mission.) When discussing the issue of on-the-job training (OJT) with commanders, S3s and unit personnel, it was evident that many shortcomings exist. The major problem seems to be that some units do not have an established procedure for directing OJT activities. Although TC 21-5-7 provides a training management task for the battalion to prepare/maintain an OJT program, it just isn't being done.

It is not the intent of this article to chastise aviation and air traffic control units for the lack of OJT programs. Rather, it is intended that we recognize the situation and offer a general discussion of the issue in hopes of helping commanders to establish a manageable OJT program. For the purpose of this discussion the term OJT refers to training Soldiers to perform jobs for which they are not already qualified. We need to consider on-the-job training as the vehicle which will qualify Soldiers in jobs while providing the benefits of their labor to the unit—and do this with the Army's approval.

The following is an extract from Appendix B, Training Management Administration to TC 21-5-7, "Training Management in Battalions," dated December 1977.

#30 TASK/RQMT: Prepare/Maintain OJT Program.

INITIATION/PREPARATION: The S3 section, in coordination with other staff sections, will prepare a program of instruction (POI) for each military occupational specialty (MOS) in which the battalion is authorized to conduct OJT training.

STAFFING APPROVAL: The S3 section submits POI to S3 for approval.

ACTION REQUIRED: The source document for the preparation of the POI is the Soldier's Manual for the particular MOS. A related document that must also be reviewed for additional initial individual tasks is the unit Army Training and Evaluation Program (ARTEP). For those MOSs which do not have a published Soldier's Manual, the Army subject schedule for the MOS will be used until the Soldier's Manual is available.

FILE/DISTRIBUTION RQMTS: The approved POI will be maintained on file in the S3 section.

REGULATION/RMKS: TC 21-5-7.

To accomplish the mission, a unit needs trained Soldiers performing in the duty positions for which they are trained. One of the many challenges for commanders is ensuring the proper assignment of Soldiers to the positions authorized by the unit table of organization and equipment (TOE). The S1s of most battalions usually do a good job of controlling the assignment of personnel. Yet, there are situations where a unit doesn't have a trained Soldier for an authorized job. What can the commander do in this situation? Perhaps OJT an individual to perform the duty. That certainly seems like an easy answer.

DES welcomes your inquiries and requests to focus attention on an area of major importance. Write to us at: Commander, U.S. Army Aviation Center, ATTN: ATZQ-ES, Ft. Rucker, AL 36362; or call us at AUTOVON 558-3504 or commercial 205-255-3504. After duty hours call Ft. Rucker Hot Line, AUTOVON 558-6487 or 205-255-6487 and leave a message

DA Pam 351-20, "The Army Correspondence Course Catalog," lists subcourses available in the OJT format

Elements Of An OJT Program. As we see it, there are generally six elements in an OJT program. Certainly, you may see the need for more or fewer elements but at least give consideration to these:

- A procedure for identifying/confirming the need for OJT.
- An individual screening process.
- A personnel action request for approving the OJT of a Soldier.
- A procedure for establishing a training and evaluation plan for each individual to be OJTd.
- A records and reporting process necessary to document the individual's training accomplishments and keep the commanders informed.
- A request for personnel action awarding the appropriate MOS.

Identifying/Confirming The Need For OJT. The need to OJT a Soldier may come as a result of the individual's expressed desire to either acquire another primary MOS (PMOS) or a secondary MOS (SMOS). Another situation is that the Soldiers may have failed to verify their MOS through skill qualification testing (SQT) and are being reclassified into another MOS. It also is possible that a Soldier may have to change MOSs because of medical factors. NCOs have been told since 1977 that they need to have an SMOS. If you are serving in a Combat Aviation Battalion (CAB) or Air Cavalry Squadron, it is likely that 10 to 20 percent of the enlisted strength of the unit is in need of OJT for any one of these reasons. The commander must be able to identify or confirm the need to OJT a Soldier for a particular job. Regulatory measures for reclassification of MOSs are contained in AR 600-200, Chapter 2. Use of enlisted personnel is covered by Chapter 3 of the same regulation.

Individual Screening Process. Having identified the need for OJT, the following factors must be considered:

- Qualification criteria for the new MOS in accordance with AR 611-201.
- Individual's retainability.
- Individual's past performance.
- Individual's civilian/military job experience.

Selecting the right individual for a job is very important. Soldiers being considered for OJT should be counseled by the commander to determine the individuals' preferences. The job requirements should be explained to the Soldier. Of particular importance is the Soldier's understanding of SQT requirements during and after the OJT period.

Request For Approval Of OJT. Controlled MOSs are listed in paragraph 2-17e, AR 600-200. The OJT approval authority may exist at the Forces Command/Training and Doctrine Command installation commander level. Major overseas commanders may delegate the authority to units commanded by a general officer. Once the decision is made to OJT a Soldier, a formal request for the action must be submitted through personnel channels on a Personnel Action Form (DA Form 4187). The battalion/squadron personnel action center (PAC) will assist in the preparation of the form. A justification of the OJT requested will be needed for Section IV of the form. The PAC will forward the completed request to the appropriate authority.

Establishing A Training And Evaluation Plan. While the personnel system is taking action on the request, attention must be given to preparing the training and evaluation plan. To do this, the commander should appoint a trainer/supervisor from the section where the Soldier will work to develop and coordinate a training and evaluation plan with the trainee and the battalion/squadron S3. The Soldier's Manual for the MOS being trained is the basic document for task selection. Training should emphasize applied knowledge through hands-on performance. The tasks should be arranged in the building-block order to allow for a logical progression of learning. The Army Correspondence Course Program offers courses in various MOSs. These are outlined in the DA Pam 351-20 series. Subcourses are available which will enhance the OJT training plan. It may not be necessary for the Soldier

to perform every task listed in the Soldier's Manual; however, it is important to remember that the individual will be testable under SQT if the intent of the training is to award a PMOS. Training must therefore be comprehensive and challenging. Training normally requires a significant investment of time, effort and money on the part of the unit. A return on the investment will be directly proportional to the adequacy of the training given the Soldier. Periodic performance evaluation must be programed to assure individual progression and to identify weaknesses. Performance oriented evaluations do not have to be formal, as in a school setting, but realistic to the unit environment. The evaluation should be sufficient to determine if the Soldier can perform a representative sampling of the tasks learned up to that time. The trainer/supervisor should prepare and administer the evaluation. It would be a good idea to have a battalion training representative present if possible.

Recording And Reporting. Be reasonable with the paperwork, keep it to a minimum. Perhaps a written report of evaluation is needed; although, an annotation in the Job Book (JB) would probably be sufficient to document task accomplishment and evaluation. The JB is structured from the Soldier's Manual and is an excellent tool for keeping track of task accomplishments. Though simple to use, supervisors should not be too quick to give credit to the individual's task proficiency. To keep the commander informed, the supervisor should report the results of evaluation and provide periodic updates about the individual's performance. The commander probably won't have the time to follow up on each Soldier's training, so supervisors should make the effort. All documentation of training should be consolidated by the completion of the training period. Documentation should include the DA Form 4187 which indicates approval of OJT, a copy of the training and evaluation plan, copies of evaluations' results or a comment sheet accounting for the evaluations, the Job Book, and any Correspondence Courses Completion Certificates.

Request For Orders. When the Soldier has completed OJT, a second DA Form 4187 must be completed at the PAC to request the appropriate MOS action. When orders are received, one copy should be retained with the records documenting the training. The battalion S3 may retain the OJT records; however, the commander may delegate this function elsewhere. Perhaps most important is ensuring that the Soldier gets a copy of the completed training file in case a question about his or her MOS arises in the future.

Elements Of An OJT SOP. What are the elements of an OJT standing operating procedure (SOP)?

- The purpose of OJT must be established by the commander. Also, a general discussion of OJT should be written. The type situations which create the need for OJT and a general statement reflecting on the serious nature of OJT should be included.
- A procedural paragraph should provide the step-by-step actions to be followed, i.e.:
  - ✓Screen personnel for OJT.
  - ✓Submit DA Form 4187 requesting OJT.
  - ✓Establish the training and evaluation plan.
  - ✓Administer the recording and reporting procedures.
  - ✓Submit DA Form 4187 for awarding the MOS.

Conclusion. Every unit (battalion size) should have a program that clearly defines the procedures to be followed for OJT. The issue of OJT is not easily discussed nor is a program easily written, principally because of the lack of a simple single source reference which directs the program. Indeed the information presented in this article may be lacking in some ways; however, we at the Directorate of Evaluation/Standardization hope it is helpful in opening a discussion of this issue. We want to hear from you. If your unit has a successful OJT program, we would like to have a copy. By consolidating our thoughts, perhaps an OJT program model can be established and provided to other units. Our address is: Commander, U.S. Army Aviation Center, Directorate of Evaluation/Standardization, ATTN: ATZQ-ES-E, Ft. Rucker, AL 36362. (Editor's note: Copies of the February 1980 ***Aviation Digest*** containing information about the ACTAAT mission can be obtained by writing to ***Aviation Digest,*** P.O. Drawer P, Ft. Rucker, AL 36362.)

OJT allows Soldiers to learn while their units benefit from the work they perform

Radio Silence—
A Good Way To Buy Victory

Lieutenant Colonel James J. Rudy

LTC Rudy was commander, Knox Armed Forces Examining and Entrance Station, Knoxville, TN, when he wrote this article. He is currently assigned as an instructor, Department of Tactics, U.S. Army Command and General Staff College, Ft. Leavenworth, KS.

THE ENEMY'S electronic warfare (EW) threat means Army Aviation operations in expected forward battle areas will be severely restricted. A lack of disciplined radio procedures by Army aviators and the reliance of helicopter operations on air-to-air and air-to-ground communications will aid the enemy EW capability.

Communications habits learned by aviators in the Southeast Asia conflict through excessive use of inflight radio communications must be changed if future combat operations are to be successful.

In peacetime, tactical training missions should be conducted under conditions of minimal radio communications and maximum radio listening silence. If those techniques can be mastered, normal missions under radio listening silence and selected key missions under radio silence can be conducted in combat.

Peacetime flight safety requirements prevent aviation commanders from using aviation assets in training under radio silence. But complex missions can be flown that very closely approach the transmission-free environment that would have to be normal under combat conditions. There are several techniques that can be used to significantly reduce the excessive amount of air-to-air communication that has been the norm in the past. Most of those bad communications habits (bad in relation to the lack of radio discipline) practiced by aviators stem from their experience and the experience of their commanders in the 1960s and early 1970s. Enough of the "old heads" are in key aviation positions so that these communications habits still exist in some aviation units. Since they have inherent military flexibility, however, those old heads who have not eliminated such habits certainly can adjust to the new methods of the dynamic Army Aviation community. Strict radio discipline and the use and practice of preplanned procedural techniques can be implemented to enhance survivability and mission accomplishment.

Some techniques that can significantly reduce radio transmissions are:

• **Simplified Ground Radio Check.** A technique which allows all radio communications (FM, UHF and VHF) of a 15-aircraft flight to be checked in 1 minute is to have all aircraft designated (as a part of premission planning) into aircraft sequence, lead through 15. The flight lead allows time for the required start and engine runup procedures, then starts the check by simply transmitting "radio check." Automatically aircraft No. 2 keys the transmitter only *once* and transmits "2 Fox" with the radio selector switch in the first position, "Uniform" with the switch in the second position and "Victor" in the third position. That procedure is sequentially duplicated down through No. 15. If there is more than a few seconds' delay by any aircraft, the next one performs the check. The flight lead keeps track, on a note pad, of any particular nonresponse by number and specific radio, and those can be picked up at the end. If any aircraft have radio problems, the flight lead makes the decision to use standby helicopters.

As soon as the radio check is complete, the flight lead hovers out to takeoff position and each aircraft follows in order. As long as the aircraft are positioned in numerical order, there is no need for pilots in command (PIC) to transmit their intentions (i.e., "No. 3 coming out"). In a tactical training environment at a field location, the aircraft should be widely dispersed.

As soon as all aircraft are positioned on the ground in the designated formation, the flight leader performs the takeoff. The easiest and safest way to accomplish this maneuver is for the flight lead to hover from parking to takeoff position and to set the aircraft on the ground 90 degrees to the left or right of the takeoff path. (If the aircraft are already loaded with combat troops, appropriate nap-of-the-earth hover checks could be performed while hovering from parking to the takeoff area.) Each subsequent aircraft is then positioned in its actual takeoff position, allowing the lead to observe the flight forming. Once the last aircraft is in position on the ground, the lead aircraft picks up to a hover, turns 90 degrees to the takeoff direction, and again sets the aircraft on the ground. This is the signal to the entire flight that the formation will take off in 10 seconds. This entire forming of the flight and the takeoff can be conducted without a single radio transmission.

• **Troop Loading Procedures.** Assume that the 15-helicopter formation lands in a pickup zone in trail formation to load troops. As soon as the first few helicopters are on the ground the troops begin loading. As the first helicopter is loaded, its crewchief gives a thumbs-up signal to the crew in No. 2. In numerical order and as each helicopter is loaded, the same signal is passed back to the rearward aircrew. After the last helicopter is loaded, its PIC transmits "Lima" to

the flight lead. All aircrews, as a part of the pre-mission briefing and standard operating procedure, know that 10 seconds after this transmission flight lead will be taking off.

That same loading operation is conducted during night operations through the use of flashlights with red lens covers to eliminate glare and damage to night vision. As the first helicopter is loaded, the crewchief signals to the aircrew behind by waving a flashlight back and forth parallel to the ground. The rearward crewchief acknowledges that signal by moving the flashlight up and down. As soon as the last helicopter is loaded, and that crewchief has acknowledged the loaded signal from aircraft 14, the PIC transmits Lima. All aircrews again automatically know that flight lead's takeoff will occur 10 seconds after that transmission.

The preceding examples are based on a relatively large helicopter formation of 15 aircraft. The same procedures can be used in much smaller helicopter formations and a corresponding minimization of radio communications can be effected.

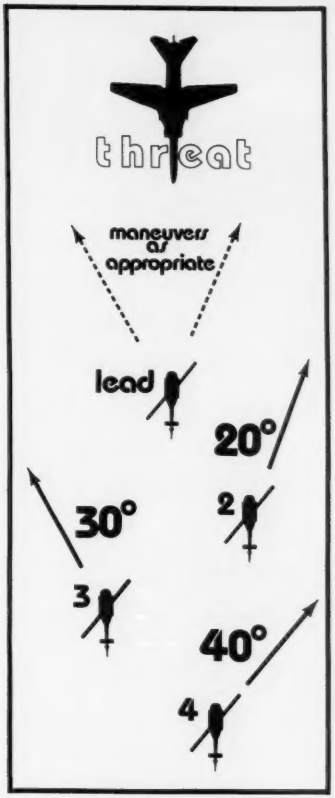
• **Terrain Flight Tactical Trail Formation.** Terrain flight operations with lift helicopters are usually conducted with 4 to 6 helicopters, with 10 to 15 occasionally being used. The smaller flights normally use a tactical trail formation, allowing all helicopters from No. 2 on back the flexibility to fly to the left or right of those to the front. At terrain flight levels the formation is maintained extremely loose, and each aircraft avoids flying the same flightpath as any aircraft ahead of it. This would greatly enhance survivability when flying raid-type missions in enemy occupied terrain. When the lead aircraft is about 1/2 to 3/4 of a mile from the designated landing zone (LZ), its anticollision light is placed in the "on" position as a signal for the formation to tighten up in order to allow the ground troops to be landed as a tactical unit. Again, under normal situations, there is no need for radio transmissions during this entire fight.

• **Troop Unloading Procedures.** Once in the LZ, the last aircraft in the formation observes to see that the troops are all unloaded, a fact that can usually be easily ascertained visually during daylight hours. If there is some delay at a specific aircraft, the crewchief or door gunner can indicate with a thumbs-down signal. As soon as all aircraft are unloaded, the PIC in the last one transmits "Uniform" as notice that flight lead will take off in 10 seconds. Again, there is no need for any transmission other than the single Uniform, and even that can be eliminated in small formations by using visual signals between the trail and lead aircraft.

The verification of night unloading of troops in the LZ is accomplished by using flashlight signals. The trail aircraft transmits the appropriate Uniform and the flight is automatically keyed to begin the takeoff in 10 seconds.

• **Bandit Break Procedure (see figure).** If enemy aircraft, ground air defense fires or impacting field artillery fires pose a serious threat to the helicopter formation, flight lead signals an initial formation breakup by transmitting "Bandit Break" followed by the number 1 or 2. Usually two previously selected rendezvous positions have been provided to aircrews during the pre-mission briefing, and the number designates which of the two will be used.

At the transmission by the lead aircraft, each helicopter breaks left or right (depending on the type of formation used and whether the respective aircraft sequence number is even or odd). The amount of initial turn from the lead aircraft's flight direction at the time of the transmission is determined by multiplying the sequence number by 10 degrees. For example, No. 2 would turn 20 degrees in a designated direction left or right while No. 3 would turn 30 degrees in the opposite direction. The initial break allows for the immediate scattering of the helicopter formation. Each PIC then evades as appropriate and navigates back to the rendezvous point where a decision to continue or abort the mission is made after all or most of the aircraft arrive.



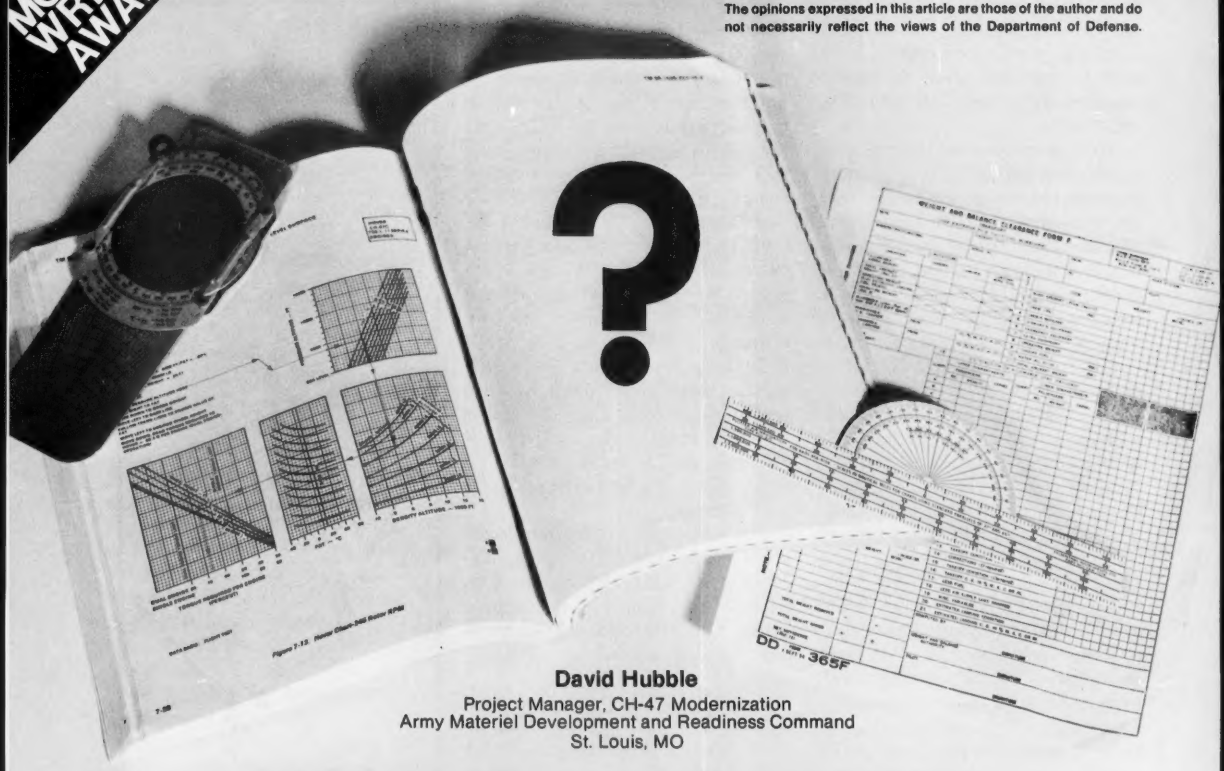
bandit break procedures

Maximum effort must be made to conduct all Army Aviation tactical training missions under minimal radio transmission standards and with maximum use of preplanned techniques. Only for reasons of uncertainty or flight safety should most transmissions have to be made.

If the described or similar procedures are mastered, the capability will exist in combat for Army Aviation forward operations to be completed under actual radio silence.

MONTHLY WRITING AWARD

The opinions expressed in this article are those of the author and do not necessarily reflect the views of the Department of Defense.



David Hubble
Project Manager, CH-47 Modernization
Army Materiel Development and Readiness Command
St. Louis, MO

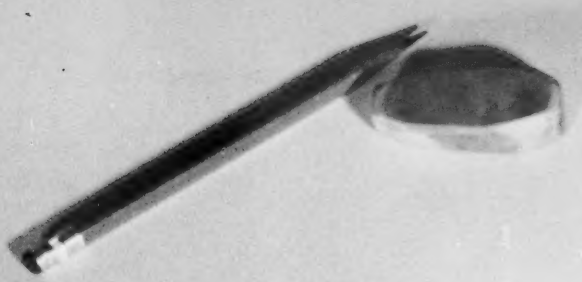
HELP WANTED

CAPTAIN IRVING T. Washington gently pulled in thrust and the CH-47 Chinook strained, came light on the wheels and struggled to a 10-foot hover. Torquemeter needles were nudging the red line. Should he go or not? He was working out of an Army airfield and he had plenty of clear, unobstructed space. The surrounding countryside was pretty level, and he did have a priority cargo in the back. He turned to Captain Deward P. Farquwart, his copilot, and said, "Everything is in the green but it doesn't feel quite right, and I'd like to be a bit higher. What do you think?"

The copilot took control and gingerly stirred the stick, his eyes scanning the panel intently. "Yes, all parameters appear to be within applicable tolerances, but I do agree the flight characteristics seem a little abnormal. I recommend we translate into forward flight and reevaluate the situation."

Irv thought to himself how pompous Deward was, but the recommendation seemed fair. So, Irv took control and eased the stick forward to get some airspeed. That's funny, he thought—the stick is all the way forward and the aircraft isn't going into translation properly. But the airspeed did build up, albeit slowly, and soon he was at 70 knots and he started a climb to about 2,000 feet above ground level (AGL). When he made the turn to the outbound heading he noticed the cruise guide indicator (CGI) go deep into the yellow. He let the bank bleed off and the CGI needle obediently fell a bit.

Once on course he said to Deward, "I reckon the programed longitudinal cyclic trim schedule is off, despite the indications. What's our Vne



photographs by Joe E. Lolley

(velocity never to exceed) supposed to be with trim retracted?" Not having written it down on his kneepad, Deward reached for the Vne computer mounted on the panel; but then he remembered that someone had removed it.

"Irving, I could consult the operator's manual, but I believe it to be improbable that I could read the graphs with the ambient light and vibration. Let's fly the CGI; it seems to be operating properly. I shall write down our current flying conditions and refer to the manual when we reach our destination." Irv shrugged—what could he say?

It was a long haul, timewise anyway, because the CGI was making them keep the airspeed down. What made things worse was that a strong headwind had developed and groundspeed was painfully slow. "I wonder what our best range speed would be," he idly thought to himself.

Now when it comes to fuel state Irv is a real chicken; he had shaved it close once upon a time and he had vowed never again. So he and Deward agreed to divert to an Air Force base (AFB) not too far away to take on some fuel; and also there was a new engine which had just been flown in, and they could pick it up while they were there. The low airspeed and headwind had really been taking its toll on the fuel flow. Luckily, Deward had been keeping track of the fuel, time and distance; so with the help of his trusty E6B computer he could get some idea of the fuel-use rate and of heading for the AFB.

The remainder of the trip was uneventful. The aircraft still felt a bit squirrelly; but the fuel burnoff had reduced the gross weight, which helped, and the CGI was down. Both Irv and Deward were glad to get down on the ground and to see the aircraft serviced and the additional cargo loaded. They went into the Air Force base operations to get the latest weather and to call their home base to let them know what was going on. Then they thought about filing a Weight and Balance Form (DD Form 365F). Deward said they had to do it because they would be taking off with the aircraft loaded differently and AR 95-16 required it. Irv argued that they would be covered by the standard load DD Forms 365 filed in base operations, copies of which they carried in the aircraft logbook. Overhearing the conversation, the Air Force Airdrome Officer (AO) joined in: "What's the problem?" he asked.

Irv explained the situation and how the AR would allow them to operate with standard loads without filing separate 365Fs for every mission. One reason that was important, he pointed out, was that in a tactical scenario they might well be hauling half a dozen different loads in the course of a single mission, and the mission could easily be changed when they were airborne. Deward agreed but commented that they were not currently performing a tactical operation and anyway, if carried together the two standard loads under consideration would not constitute a third standard load.

The AO ended the argument by stating he would not authorize the aircraft to take off without their completing a specific 365F for this flight. Deward was irritated by what he considered the high-handedness of the clearing authority but he also felt a little unsure of himself because it was a long time since he had had to fill out a 365F.

Irv and Deward reviewed the loading and performed weight and center of gravity (CG) computations. They suddenly realized that the earlier load had been put in the wrong place in the cabin and the CG had been out of limits.

No wonder the aircraft hadn't handled properly on the inbound leg! Somewhat embarrassed, they asked for an Air Force crew to help move the load to the right location.

Having done that, they decided to write up a full mission "Performance Planning Card" so they would know all primary operational flight limits. That took quite a while, requiring them to thumb through chapters 5, 6 and 7 of the operator's manual and to use a lot of the 50-plus pages of charts and instructions. A straight-edge and a pretty sharp pencil were needed to come up with the answers.

Irv and Deward didn't always agree with each other, the small charts included a lot of information, and each was a challenging optical illusion. Eventually they decided they had got it close enough and they just hoped they didn't have to deviate from the flight plan. It was bad enough trying to read the charts at a steady, well-lit desk in the relative quiet of the operations flight planning room; there was not a chance they could do any of it in the noise and vibration-filled cockpit of a laden CH-47C.

HELP WANTED

Finally, they got clearance for the flight, rose into the blue yonder and were on their way, feeling more confident because the aircraft was handling better.

The basic point to that corny little story is the requirement for and importance of thorough mission planning.

Make sure a Weight and Balance Form (DD 365F) is completed for each mission. There is absolutely no use in having forms representing the basic aircraft and vaguely similar loads sitting in the base operations filing cabinet (and/or the aircraft logbook). It does take a few minutes to get the numbers, perform the computations and arrive at the answers, but it is required, it is safety and it is professionalism.

Also complete a "Performance Planning Card" for the mission. That gives you such information as your estimated hover capability at departure and destination, speed limits, engine-out capability, speed for best climb, fuel flows, etc. Getting the answers really isn't difficult. It may make you cross-eyed, be a challenge in comprehension and remind you of filling in your tax return, but it really isn't difficult. Done properly, it will give you confidence, it will make you safer and it will show common sense.

Cross your fingers though and hope you don't have any in-flight mission changes because you cannot properly prepare for that, and you are going to be left to rely on rules of thumb. Use those with considered forethought and great care; don't just apply them blindly. A prime example is that ubiquitous and nefarious "density altitude" (DA). Make sure you know what it does to your aircraft's performance, everywhere in the envelope, before using it for real.

For instance, check the operator's manual for a CH-47C equipped with T55-L-11 engines. At sea level pressure altitude and plus 15 degrees celsius (C) you find the 78 percent available engine torque will give you a hover-out-of-ground-effect gross weight capability of about 45,500 pounds at 245 rotor rpm. At 3,000 feet pressure altitude and minus 15 degrees C the 78 percent available engine torque will give you a gross weight capability of about 42,500 pounds. Both conditions equate to sea level DA, but there is a 3,000-pound difference in capability—yes, 1½ tons—and that can get you in trouble!

The foregoing example is certainly not unique; you can see similar ones under different conditions and for other helicopters. So, to be a professional pilot you have to do a lot of careful work in proper mission planning. It takes concentrated effort, but the ideals should not be forsaken even if in a hurry. That is when most mistakes are liable to be made. Of course, none of this is news; you have heard it all before.

Do you want help? What would you say to the offer of a tool to take the drudgery out of that planning? How about avoiding all the charts in the operator's manual for a start? Would you like to be able to make planning changes en route? Do you need a substitute for the E6B?

Most pilots will say "yes" to equipment which reduces the workload and enhances their professional skills. And for once the cost would not be an arm or a leg, just a couple of fingers. The answer is at hand, literally, in the form of a hand-held calculator. Off-the-shelf programmable calculators are available which have the capacity to hold the limitations shown in chapter 5 and the performance charts shown in chapter 7 of the operator's manual. Such a calculator could be used to compute the output for the mission Performance Planning Card and the DD Form 365F with an accuracy which would match the ability of a good pilot working with the manual in a favorable environment. There are modules you can plug in that

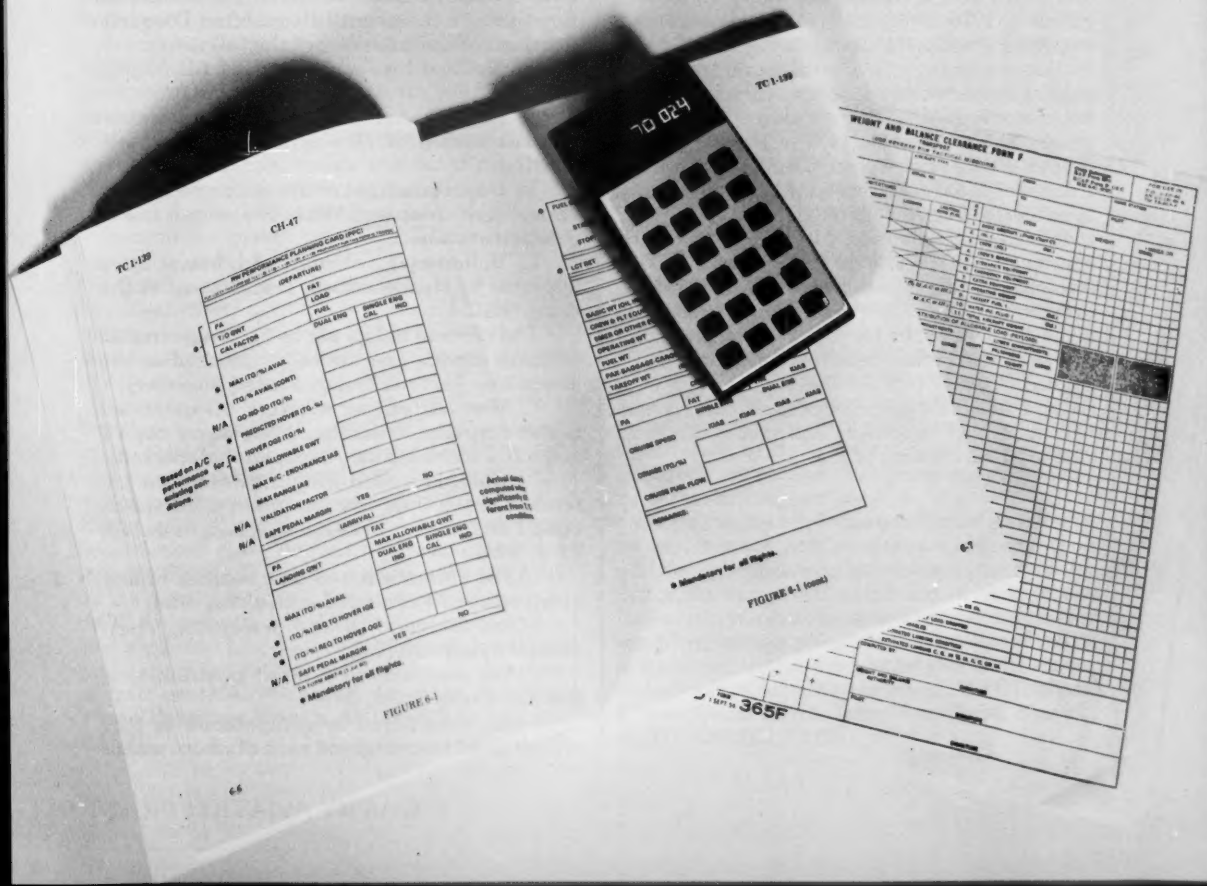
could hold the data for a specific model helicopter or a specific engine, or maybe there would be adequate capacity in one module for a number of helicopters. And navigational problems could be programed.

As for displays, some calculators can show alphabetic characters. The operator can be prompted to provide input, say, "FAT = C" is displayed to indicate the requirement for a value of free air temperature in degrees Celsius. Output can be as descriptive, "OEIQMAX = 60" meaning the maximum (MAX) torque (Q) available with one engine inoperative (OEI) is 60 percent. All the equations can be hardwired so they could not be erased; and a continuous memory feature can hold inputs in memory until the operator positively changes them, with the power on or off and with or without batteries installed.

Power? Installed batteries can power liquid crystal displays for very long periods of time, and most calculators have an additional external power source capability. Printers are also available if you need a permanent record for some reason. The calculators can operate properly in all the conditions under which the pilot is normally going to function, in the operations room or the cockpit. And calculators have met the radio frequency interference standards developed by the Radio Technical Commission for Aeronautics, so running a program is not likely to activate the mike, open a cargo hook or flame an engine.

To show how feasible all this is, consider capabilities demonstrated to date. Over the past couple of years, some engineering work was done in the Aviation Research and Development Command, St. Louis, MO, to program a calculator with Army helicopter data. That was promising but the effort fizzled out when funds were cut, primarily because of the absence of a formal user requirement. In the summer of 1979 four C model CH-47s crossed the Atlantic to assess the feasibility of self-deploying CH-47s to Europe. Equipment included a calculator with a printer and the commercially available navigation module. The after-action report from that flight recommends that such a calculator be part of the self-deployability equipment package, if one is developed. Pilots of the U.S. Marines have a calculator programed with all necessary operator's manual data to perform mission planning on the ground or in the air for their AV-8 Harrier.

Want help? Make your requirements known, help could be at hand!



AVIATION PERSONNEL NOTES

Army Aviation Service Policy

THE ARMY STAFF approved on 19 October 1980 a personnel policy clearly defining the requirements for an officer to be considered in aviation service on a career basis. This policy overturns a previous Army practice that allowed commissioned aviators not holding an aviation specialty to receive continuous Aviation Career Incentive Pay (ACIP). Approval of the aviation service policy ensures that the Army is in full compliance with Public Law 93-294 (Aviation Career Incentive Act (ACIA) of 1974).

The new Aviation Service Policy is applicable to all rated Army aviators, but the group most directly affected are those officers that were reclassified out of an aviation specialty by a Department of the Army (DA) board of officers in 1976 during the initial implementation of the Officer Personnel Management System (OPMS). Aviators that were precluded by the board from having aviation as one of their specialties were informed they would receive ACIP as long as they remained eligible under the provision of the 1974 ACIA.

The Defense Audit Service (DAS) questioned the practice of allowing officers not holding an aviation specialty to receive continuous ACIP. The DAS concluded that commissioned officers who do not hold an aviation specialty are not "... in aviation on a career basis" and are not entitled to ACIP as prescribed by Public Law. A proposed Army position was forwarded to the Judge Advocate General and Comptroller for review with a recommendation to continue the current practice. However, both agencies supported the DAS finding and ruled the practice to be legally objectionable. After months of negotiation and staffing the Army developed the following policy:

Aviation Service Policy

· All active duty Army officers who hold an Army Aviator (or higher) aeronautical rating, or are in training leading toward one, are part of the Army's authorized rated inventory and are considered to be engaged in aviation service on a career basis so long as they meet the criteria outlined in the following discussions.

· For management purposes, all aviators receive a pilot status code (PSC) of 1 (aviation service qualified) upon award of their aeronautical rating. Aviators will retain a PSC and be managed as aviators to meet peacetime and/or mobilization aviation requirements throughout a career until disqualified. Disqualification results from one of the following:

☐ Medical incapacitation per AR 40-501 (PSC 2).

☐ Flight Evaluation Board recommendation and AR 15-6 (PSC 3)—nonmedical disqualification.

☐ Departure from active duty or a reserve component troop unit (PSC 4)—aviator not in aviation service.

☐ Voluntary/involuntary withdrawal, upon approval by Headquarters, Department of the Army (PSC 4).

· The officers below are to be considered in aviation service and are to be counted as the peacetime Army authorized rated inventory.

☐ Warrant officer aviators on extended active duty who maintain a pilot status code 1 and a 100 series military occupational specialty.

☐ Commissioned officer aviators on extended active duty who maintain pilot status code 1 and hold an aviation specialty code (15, 71 or 67J).

☐ All commissioned and warrant officer aviators not on extended active duty who:

○ Are assigned to and performing operational flying duty, or

○ Are assigned to a rated position in a Reserve Component, or

○ Are considered by components as part of their rated inventory and each of whom within

Lieutenant Colonel Joe D. Carothers
Chief, Aviation Plans/Programs Branch
Officer Personnel Management Directorate
U.S. Army Military Personnel Center

the preceding 24 months were rated officers on active duty or assigned to rated positions.

- **Rated officers remain in aviation service until disqualified or terminated.**
- **The following does not disrupt the career aviation service of a rated officer.**

☐ **Failure to qualify for continuous incentive pay at the 12th or 18th year gate.**

☐ **Assignment to a nonaviation duty position.**

- **Entitlement to continuous ACIP exists only as long as an officer maintains a PSC of 1 and holds an aviation specialty of 15, 67J or 71 and remains in Army Aviation service on a career basis.**

Commissioned aviators not holding OPMS aviation specialties that qualify for ACIP were notified in the November/December 1980 timeframe that their pilot status code would change from PSC 1 to PSC 3. The subsequent addition of PSC 4 (Aviator—not in aviation service) better categorizes their specific situation and accordingly their PSC will not be changed from PSC 1 to PSC 3; they will be changed from PSC 1 to PSC 4.

In summary, the key points to the Army Aviation Service Policy are:

- Entitlement to continuous ACIP exists only as long as an officer maintains a pilot status code of 1, holds an aviation specialty of 15, 67J or 71 or the 100 series military occupational specialty (MOS) and remains in Army Aviation service on a career basis.
- Implementation of the Aviation Service Policy into Army regulations aligns the Army with the intent of the Public Law and ensures the Army is in full compliance with the intent of the Public Law.

You, as aviators, have not just read "another" policy. It is *the* policy that establishes the base line for managing your career in Army Aviation. The next issue of the ***Aviation Digest*** will carry a follow-on article which will tie the Aviation Service Policy to your entitlement to ACIP. An understanding of the Aviation Service Policy and the Public Law governing ACIP will provide all you ever wanted to know about "flight pay" but were afraid to ask. **(MAJ Michael K. Jennings, Aviation Plans/Programs Branch, AUTOVON 221-8156/8157)**

Centralized Assignment Procedures (CAP III)

As part of a program to make you, the Soldier in the field, aware of personnel actions and how they impact on the total force, a thumbnail sketch of assignment procedures is in order. The CAP III system implemented in 1973 is designed to select available personnel from the enlisted master file (EMF) and nominate those most eligible to fill requisitions from field commanders.

Military Personnel Center (MILPERCEN) does not "create" jobs; it fills requisitions submitted by field commands. These are submitted to MILPERCEN with anticipated personnel losses and/or changes in TOE/TDA (table of organization and equipment/tables of distribution and allowance) manning levels. If the requisitions are valid they are put in the CAP III computerized system for assignment action as are worldwide distribution priorities. CAP III places the requisition in priority, identifies who is available to move by MOS/grade and then nominates that person qualified to do the job identified by the requisition.

I must emphasize CAP III just nominates you; *it does not assign you.* Nominations are given to branch assignment managers for approval or rejection. All decisions are finalized only after review by the manager and usually by the professional development noncommissioned officer at branch. It is here that your preference, the needs of the Army and your professional development are interwoven to make the assignment.

Take care when updating your DA Form 2; this is the form that updates the EMF. Again, data from the EMF are used by CAP III in selecting the most eligible person by assigning point values to criteria such as paygrade, primary and secondary MOS, previous tour pattern, date eligible for return from overseas, overseas area of preference, additional skill identifier, security clearance and language qualification.

Having accomplished the screening and selection processes, personnel requisitions are filled and qualified Soldiers are selected for worldwide assignment and the assignment information is put back into the CAP III system. Assignment instructions go through SIDPERS (Standardization Installation/Division Personnel System) to the gaining and losing commanders. Upon receipt by the local servicing military personnel office, you are notified and appropriately scheduled for out-processing.

I hope that this article has enlightened you, so that the next time you walk into the post levy section you will have some idea as to how they got your name for that particular overseas assignment. In future articles I will key in on specific personnel actions (foreign tour extensions, joint domiciles, homebase, deletions, special assignments) to give you a better idea of the actions that are accomplished by your branch. **(LTC Richard L. Naughton, Chief, Trans/Avn/Maint Branch, AUTOVON 221-8325)**

A Resolution Conference at the Army Aviation Center

Betty Goodson
Staff Writer

ARMY AVIATION is a dynamic and growing force within our Army with an ever expanding role on the battlefield of tomorrow. But to be an even more viable force, it requires the concentration and contributions of the entire Army team—developer, user, planner and, above all, the fielded units. All must play a part and unite their efforts to achieve optimum results with the manpower and materiel available.

Problems and shortcomings—or challenges, as they may better be called—must be ferreted out and resolved. Such was the objective of the U.S. Army Aviation Training Symposium and Policy Committee Meeting which brought together representatives of major Army commands and Department of the Army agencies at Ft. Rucker, AL, in early December. The two separate but interfacing conferences each occupied 2½ days of a full week of aviation planning and review of a wide range of field-generated issues. (See ***Aviation Digest,*** January 1981, page 27, for an account of the opening proceedings.)

Established by AR 95-1, the annual Policy Committee Meeting is the DA level forum to which subordinate aviation standardization committees can submit issues they are unable to resolve. Its members are 22 representatives from the major Army commands and Department of the Army agencies; and the executive chairman is Brigadier General Richard D. Kenyon, Deputy Director of Requirements and Army Aviation Officer, Office of the Deputy Chief of Staff for Operations and Plans, DA. Recommendations from this committee are presented to the Army Chief of Staff who then tasks the appropriate action agency for implementation.

Since the Policy Committee Meeting was scheduled this year to be held at Ft. Rucker, the Director of Training, Office of the Deputy Chief of Staff for Operations and Plans, Major General James C. Smith, determined that this would be an opportune time for the conduct of an Army Aviation Training Symposium. (General Smith was retired last month in ceremonies at Ft. Rucker. See February 1981 ***Aviation Digest.***) Since all key players in Army Aviation training and operations worldwide would be assembled at Ft. Rucker, this was deemed to be a money and timesaving initiative and was so implemented.

TRAINING SYMPOSIUM

The symposium was held first. Four work groups addressed issues under the headings of threat, equipment, training and aviator attitudes which were derived from input to an Army Aviation Training Study sent to the field from the Aviation Center earlier in 1980. After each group completed issues in its particular area, the attendees reconvened for presentation of recommendations and further discussion in joint session.

Some of the 52 points considered in the symposium were:

- ***Issue:*** Current ARTEPs lack realism and do not sufficiently address combat requirements. ***Recommendation:*** Identify the appropriate ARTEP for every type of unit/section by listing all TOE numbers and sections applicable to that ARTEP manual; subject units or portions of units to realistic threat ratios during portions of the ARTEP; and pursue development of instrumented ranges which can serve a multitude of needs such as ARTEP scoring, unit and individual training, research and development. ***Action Agency:*** TRADOC, FORSCOM, DARCOM.
- ***Issue:*** Senior nonaviation trainers are sometimes unaware of or disregard aviation training requirements. ***Recommendation:*** That a series of manuals be developed on aviation employment, concepts, techniques and utilization for export to all commanders and that those subjects be incorporated in basic, advanced and senior officer service schools and pre-command courses; that a training course for S3 Airs and aviation

GLOSSARY

ALSE	aviation life support equipment	IP	instructor pilot
ARI	Army Research Institute	MACOM	major Army command
ARTEP	Army Training and Evaluation Program	MILPERCEN	Military Personnel Center
ASI	additional skill identifier	MOS	military occupational specialty
ATM	aircrew training manual	NBC	nuclear, biological, chemical
CMF	career management field	POI	program of instruction
DA	Department of the Army	SGA	skill grade authorization
DARCOM	U.S. Army Materiel Development and Readiness Command	TDY	temporary duty
DCSOPS	Deputy Chief of Staff for Operations and Plans	TOE	table of organization and equipment
DCSPER	Deputy Chief of Staff for Personnel	TRADOC	U.S. Army Training and Doctrine Command
FAC	forward air controller	USAAVNC	U.S. Army Aviation Center
FORSCOM	U.S. Army Forces Command	USAREUR	U.S. Army, Europe
IERW	initial entry rotary wing	USATSCH	U.S. Army Transportation School

liaison officers be provided and tactics seminars encouraged for the combined arms team; and that an aviation oriented command post exercise be developed and exported for ground commanders to use. ***Comments From the Floor:*** Need a separate DA pamphlet to give senior commanders to include a fold-out showing unit capabilities. ***Action Agency:*** TRADOC, DCSOPS.

- ***Issue:*** IERW graduates are not sufficiently trained for the combat environment. ***Recommendation:*** That the IERW course be lengthened to provide additional training. That will be done if the revised POI, which includes a 1-week ARTEP-type field training exercise, is approved. *Action Agency:* USAAVNC.
- ***Issue:*** Aviation Warrant Officer retention. Attrition rates for these officers have a far-reaching effect on sustaining the needed force. ***Recommendation:*** ARI and MILPERCEN are engaged in a study on this issue which is considered adequate and appropriate for this time. Any corrective actions should be tabled until the final study results are available; then a detailed, comprehensive corrective program can be initiated. ***Action Agency:*** MILPERCEN.
- ***Issue:*** Current training programs of aviation maintenance personnel and their career development fall short of the Army's needs. ***Recommendation:*** That USATSCH and TRADOC continue to spearhead actions to evaluate and implement plans concerning CMF 67 study findings; and that force structure skill and grade requirements be sustained by revising CMF/MOS, SGA and organizational structures, by developing comprehensive maintenance training programs and unit requirements, and by increasing incentives to the first-term reenlistment of these personnel. ***Action Agency:*** TRADOC, DCSPER.

Three issues dealt with protection for Army aircraft and personnel in an NBC environment, and corrective action was recommended for these.

Better management of the Army's ALSE also was considered in the symposium and then received further consideration in the Policy Committee Meeting which convened at noon Wednesday.

POLICY COMMITTEE MEETING

Topics considered included the following:

- ***Issue:*** There are no TOE positions and no training/qualification programs for ALSE personnel. ***Recommendation:*** That TRADOC report the status and concept of the ALSE training program to be conducted for the ASI to include when graduates will arrive in the field.
- ***Issue:*** There is no single Army organization that controls the ALSE program; there is a lack of ALSE maintenance which has contributed to severity of injuries; and many commanders have little or no knowledge of what the aviation life support system should include. ***Recommendation:*** That Army Regulations be adopted which form a foundation and provide an ALSE charter from which the Army can structure a program, and which establishes an ALSE management system.
- ***Issue:*** Should the Army Aviation Annual Written Exam be retained and who should be required to take it? ***Recommendation:*** That the present exam continue to be used; that the USAAVNC assure the exam is keyed to the needs of the field; that consideration be given to expanding the exam requirement to include nonoperational aviators with a specific version to be developed for them; and that USAAVNC examine the requirement for all IERW students to complete the exam before graduation.
- ***Issue:*** As now written, AR 95-1 states an individual aviator must be fully qualified in a light observation aircraft to fly as pilot in command without an instructor pilot on board. "Fully qualified" includes both contact and instrument qualification. ***Recommendation:*** That AR 95-1 be

changed to allow *Reserve Component* rotary wing aviators to fly as pilot in command and log pilot time after completing contact and academic training.

• ***Issue:*** The requirement to complete 50 percent of the annual flying hours during each semiannual period significantly detracts from the commander's ability to conduct unit-level flight training during the 15-day annual training period for Reserve Component aviation units. ***Recommendation:*** That TC 1-134 be changed to allow commanders to adjust the FAC semiannual ATM flight-hour requirements by up to 15 percent to meet training and mission needs. This would be accomplished by flying up to 65 percent of the requirements in one semiannual period and not less than 35 percent in the other. Exercise of this authority will not change the unit's annual flying hour program nor will it cause the individual aviator's annual ATM flight-hour requirements to be reduced.

• ***Issue:*** There is no source to provide aeroscout instructor pilots to the field. ***Recommendation:*** That USAAVNC restructure the OH-58 IP course to meet needs in the field as a short-term measure; and that the Rotary Wing Instructor Pilot Course developed by the Aviation Center's Directorate of Training Developments be approved and implemented as long-term action.

Near the end of the Policy Committee Meeting, Major General Carl H. McNair Jr., Ft. Rucker's commanding general, addressed the question of institutional training versus field transitions in selected graduate type aircraft, specifically the UH-60 Black Hawk.

"The Black Hawk," he said, "is a superb helicopter which does not present any unique transition flying problems—in fact, it is perhaps easier to physically fly than a UH-1—however, it is a tremendous systems machine . . . which requires a very thorough understanding of its relatively sophisticated subsystems, twin engine, redundant controls and other advances simply not found on the UH-1.

"That understanding can be gained far better at the Aviation Center where specially designed simulators, training aids and other training devices representing the UH-60 subsystems are available. Such devices simply cannot be available at every Black Hawk unit location.

"FORSCOM and DA have concurred in this; and we now plan to transition all the Black Hawk pilots of the 82d at Ft. Rucker, as well as for the 9th and 24th Divisions later."

General McNair added: "There are some distinct advantages to institutional transition training here as opposed to the field; and especially there are certainly some economic advantages.

"Look at the Chinook (CH-47) simulator, for example, where we save about $1,100 per hour of operation with the simulator over the aircraft. If Chinook transition is done at Campbell or Hood, all flying must be done in the aircraft at a significantly higher flying hour cost than simulator operation and you do not get the same degree or depth of systems training, either. Of course, a certain amount of the time will always have to be done in the aircraft, but our tests have clearly shown that 20 to 50 percent of the time can be done in the simulator—with even better training results than if one did the entire transition in the aircraft itself.

"There are also some front-end savings with respect to the Black Hawk; USAREUR has estimated that if all of the UH-60 aviators in Europe were required to return to Ft. Rucker, TDY for the period in question, travel and per diem would cost approximately $500,000. On the other hand, if they did all of the training in the helicopter in Europe, without benefit of the simulator and other training devices, it would cost something like $2.1 million more in flying hour costs; so there is still about a $1.6 million saving in returning the aviators to the Center. Beyond this, however, we must consider the potential effect on unit training and readiness by using our aircraft extensively for individual transition training as opposed to unit missions.

"It is therefore very clear that, for the time being at least, the Black Hawk training should be done at the Aviation Center. Once additional simulators are fielded, then it may be possible to prepare an exportable training package for unit transition. By then we will have far more UH-60 experience, both operational and training, behind us and will be better able to make such a decision."

All of the recommendations from the Training Symposium and the Policy Committee Meeting have now been forwarded to the appropriate MACOM headquarters or Department of the Army office for necessary follow-up action.

The work of the 70 attendees, according to General Kenyon, was considered most constructive in devising methods and procedures to manage the resources of Army Aviation in a more efficient and effective manner. Without doubt, it was the consensus of those present that the challenge was met. Aviation officers returned to their worldwide commands with a full record of the proceedings and immediate feedback on what is to be done to resolve field unit concerns in a multitude of aviation training and policy matters.

THREAT

Major Frank E. Babiasz
and
First Lieutenant Mark Grablin
Threat Branch
Directorate of Combat Developments
U. S. Army Aviation Center
Fort Rucker, AL

SOVIET TRANSPORT HELICOPTERS-
Who has the advantage ?

MOST U.S. ARMY aviators probably feel that the U.S. holds a distinct technological advantage over the Soviets in rotary wing aircraft development. This is not necessarily true. Although we took the lead exploiting the versatility of the helicopter in Vietnam, the Soviets did not stand still in helicopter development. Indeed, they have learned quite readily from our experiences. This article does not directly assess a threat of sorts, but it affords new insights into Soviet rotary wing aircraft technology.

The Soviet interest in rotary wing aircraft has undoubtedly increased over the last decade. Initially considered too expensive and vulnerable for combat application, the Soviets have built an impressive array of helicopters. Particularly noteworthy is their interest in armed helicopters; however, their transport aircraft, of which many are armed, give a truer indication of the overall Soviet technological advances in the helicopter realm.

The Soviets became involved with helicopters before World War II. An outstanding historical summary from *International Defense Review* offers a keen insight into Soviet helicopter development by reviewing the accomplishments of their four most influential designers. The magazine, in an article by Peter Borgart in its August 1979 issue, relates that J. P. Bratutchin headed the Soviet Helicopter Brigade from 1933 to 1939. Later he was in charge of Test Design Bureau Number 3 which, although terminated in 1951, illustrates early Soviet interests in rotary wing aircraft.

In 1944, A. S. Yakovlev began working on an experimental helicopter. By 1947, test flights resulted in the first government request for a

Mi-4

Mi-10 & Mi-6

light helicopter. The result was the Yak-100, which was first flown in the late 1940s. Although suitable for service production, the Yak-100 lost out in competition to the Mi-1 HARE of the Mil Design Bureau, covered below.

In 1951, Yakovlev was tasked to develop a heavy transport helicopter, and only 1 year later the Yak-24 was in the flight test phase. Although only 40 units were produced, it was undoubtedly a remarkable aircraft for its time. According to *International Defense Review,* it featured the largest fuselage cross section and cargo bay of the time. In addition, it set two world records for payload (2,000 kilograms (kgs) and 4,000 kgs) lifted to altitude. The magazine also reports, "the Yak-24 could carry 40 fully equipped troops, 4,700 kgs of freight, or 18 stretchers which could be winched onboard . . . ."

International Defense Review further states that N. J. Kamov, another Soviet rotorcraft pioneer, "started work on rotary wing aircraft in the 1920s . . . ." In 1945 he began construction of the Ka-8 which eventually led to the production of the Ka-15 HEN for the Soviet Navy. This helicopter is reported to have been produced in large quantities and is credited with two world speed records, in 1958 and 1959. Following future successes with the Ka-18 HOG and Ka-20 HARP (a turbine powered helicopter), Kamov's introduction of the Ka-22 HOOP was the highlight of his career. It was a complex aircraft and according to *International Defense Review* "was powered by twin 5,495 SHP turbines mounted on the wing tip pods." Although the HOOP never entered production, it was capable of carrying 70 to 100 fully equipped troops. In 1961 it set eight world records of performance.

Most noteworthy, however, was the most successful of Soviet helicopter designers, M. L. Mil, who in 1947 became head of the Mil Experimental Design Bureau. It was here he initiated the GM-1 helicopter project which ultimately became the Mi-1 helicopter. The most notable aspect was that the GM-1 became the first Soviet helicopter to be built with a single main rotor and single antitorque tailrotor. The Mil Bureau continued to be a highly successful organization contributing significantly to the Soviet's rapid advance in helicopter technology. The helicopters discussed in this article are directly attributed to this one designer. Although M. L. Mil died on 31 January 1970, the self-proclaimed world's largest helicopter organization continues under the direction of Marat N. Tishchenko.

There are numerous differences between Soviet and U.S. transport helicopters and their tactics and doctrine. First, their requirements for a particular type of aircraft for a specific mission are not necessarily comparable to ours. For example, the requirement to operate in adverse weather conditions over all types of terrain necessitates the need for extensive avionics and related systems. Therefore, the Soviets equip most of their helicopter fleet with not only basic instruments and avionics, but add radio altimeters, a four-axis autopilot, astro-compass for polar flying, and a deicing capability for the main rotor, tailrotor and windshield.

Regarding tactics and doctrine, it must be understood that only recently, through an accelerated production effort, has the Soviet Union developed

the capability for extensive helicopter operations. Therefore, they are still experimenting with helicopter air assault tactics and techniques. Additionally, Soviet helicopter regiments are subordinate to the tactical air army of the front which allocates the aircraft necessary to army or division commands for specific operations. Thus, as part of the air force, they are not as responsive to the lower command levels as their U.S. counterparts.

Let us now review Soviet transport helicopters designed by Mil, with emphasis on versatility, firepower and load-bearing capabilities they possess.

The Mi-1 HARE is one of the first of a large family of helicopters to be produced by the Mil Bureau. The HARE is a single engine, liaison-type aircraft. Its armament can include one 12.7 millimeter (mm) machinegun and one 16-shot 57 mm rocket pod or two antitank guided missiles (ATGMs) (AT-2 SWATTER or AT-3 SAGGER).

Holding the distinction of being the only Mil-designed helicopter to be totally produced by a satellite country, the Mi-2 HOPLITE has been produced under Soviet license in Poland since 1965. The HOPLITE, a general-purpose light helicopter, retained the basic configuration of the Mi-1. However, it is distinguished from the latter by the use of twin turboshaft engines mounted side by side above the cabin. The HOPLITE is employed in general support of military units with primary applications of reconnaissance, liaison and armed support. Armament can include a 12.7 mm machinegun and either two 16-shot 57 mm rocket pods or four AT-3 SAGGER ATGMs.

The Soviet counterpart in terms of transport capability to the U.S. UH-1 Huey is the Mi-4 HOUND. In service since 1954, and looking like the U.S. CH-34 Choctaw, the HOUND exists in several versions—the basic transport (HOUND A); an antisubmarine warfare version (HOUND B); and an electronic countermeasure version (HOUND C). Most versions do not carry armament, although the HOUND A can mount a 12.7 mm machinegun or a cannon in front at its vertical gondola. Optional weapon pylons can be added to support four 16-shot 57 mm rocket pods or four ATGMs (AT-2 SWATTER or AT-3 SAGGER).

First announced in 1957, the Mi-6 HOOK was then the largest transport helicopter flying anywhere in the world. Clam shell rear doors facilitate the loading of large bulky cargo. Freight also can be carried externally, suspended beneath the aircraft. When the aircraft is operated in this flying crane role, the small wings which normally offload the rotor in flight can be removed, permitting an increase in payload. Power to the main rotor is supplied by side-by-side turboshaft engines mounted on top of the cabin and producing 5,500 shaft horsepower (SHP) each. The primary mission of the HOOK is to transport heavy equipment and cargo. Its secondary mission is to transport up to 60 troops. Most HOOKs used for tactical roles have a 12.7 mm machinegun in the fuselage nose.

Capable of carrying a heavy cargo, troop or weapon load, the turbine-powered Mi-8 HIP is part of the backbone of the Soviet helicopter force. The HIP C and E have twin 1,500 SHP turbine engines, a 5-blade main rotor and a 3-blade tail rotor. The fuselage is a conventional all-metal structure with tricycle landing gear.

The HIP C exists in both civil and military forms, being distinguished by the latter having small circular windows rather than large square windows in the passenger section. Armament of the HIP C may include four 16-shot 57 mm rocket pods, four 250 kg bombs or two 500 kg bombs, and four AT-2 SWATTER ATGMs. Aside from the external weapon stores, the HIP C may mount a light machinegun in the side door, and each window in the transport section is equipped with a support bracket to allow troops to fire their assault rifles at ground targets from the air.

The HIP E is the world's most heavily armed helicopter. Its armament includes a 12.7 mm nose

machinegun, six 32-shot 57 mm rocket pods (or four 250 kg bombs or two 500 kg bombs), and four AT-2 SWATTER ATGMs.

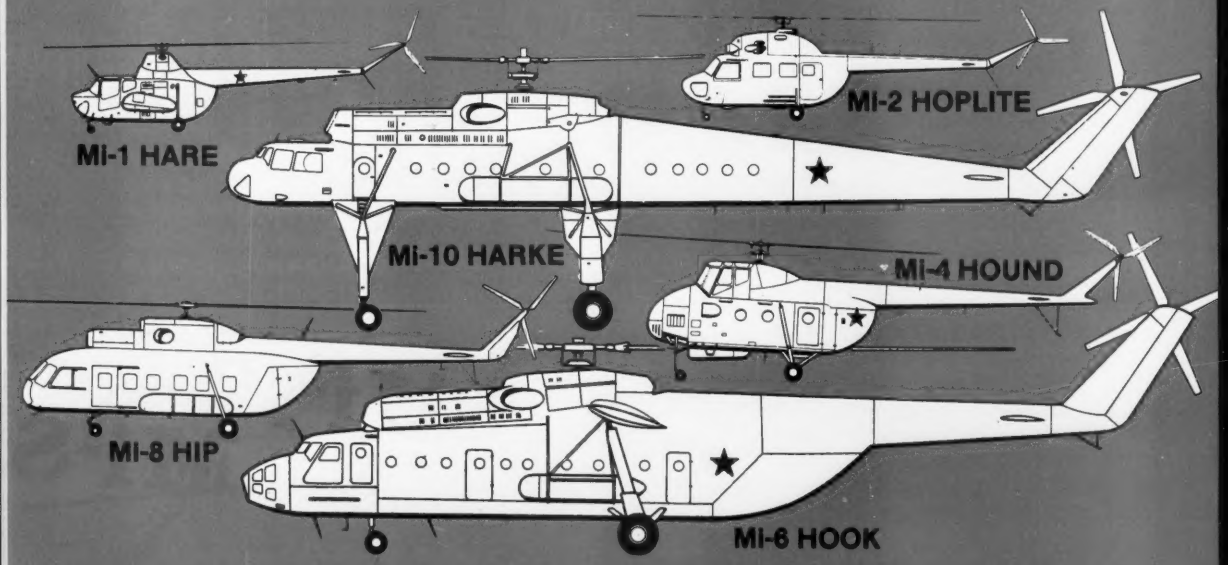
First seen in 1960 and entering service in 1962, the Mi-10 HARKE used many of the systems and components of the Mi-6. However, the Mi-10K (1966) has improved twin turboshaft engines rated at 6,410 SHP each. The original Mi-10 incorporates a hydraulic gripper system for attachment of cargo loads. The Mi-10K with shorter landing gear and a vertical gondola can carry only external sling loads and small loads internally.

With its conventional airplane-type fuselage and tail, the Mi-12 HOMER is by far the world's largest helicopter. Mounted at the tip of the reverse-taper, strut-braced high wings are five-bladed rotor systems driven by twin turboshaft powerplants.

Although the HOMER has been in service since 1973, only four prototypes (one crashed) are known to have been built. The military application of the HOMER would be in support of rear area logistical units carrying only internal loads or up to 200 troops.

Due to the age of the Mi-6 and Mi-10 and the problems faced with the Mi-12, the Soviets are developing a new heavy lift helicopter, which NATO has designated HALO A (no photo available). It is reported to have a single main rotor/tail-rotor configuration with clam shell rear loading doors. Representatives of the Mil Bureau have discussed their current involvement in heavy lift helicopters with a total installed power of around 25,000 SHP.

In summation, the Soviets are second to none in helicopter technology and development. Although there are some minor technological deficiencies, the increased emphasis the Soviets are placing on rotary wing aircraft will correct these problems in the near future. U.S. Army Aviation must continue to plan for the future, or it may find itself lagging far behind in a field which many U.S. Army Aviation people consider exclusively their own.



J.J. Johnson

Mr. Johnson was a summer-hire employee in the Public Affairs Office, Ft. Rucker, AL, when he wrote this article. He is an assistant instructor in journalism at Tuskegee (AL) Institute

PUTTING A CAP ON Head Injuries

IT MAY BE PREMATURE to report that a new military aviation helmet will be adopted in the immediate future. But a more than safe prediction is that the number of pilots surviving aircraft accidents will increase if procurers of military equipment heed scientific data being generated at the U.S. Army Aeromedical Research Laboratory (USAARL), Ft. Rucker, AL.

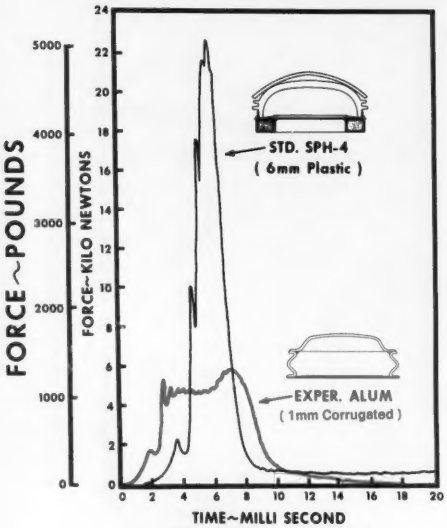
One of eight laboratories of the U.S. Army Medical Research and Development Command, Office of the Surgeon General, USAARL is the recognized leader in conducting fundamental and applied research on the biomedical aspects of Army Aviation.

A major area of interest is the cause and prevention of aviator head injuries; it is receiving the attention of Captain (Dr.) Dennis Shanahan, the project's flight surgeon; Navy Lieutenant Commander Tom Reading, a registered physical therapist, a designated aerospace physiologist and the Navy's liaison officer; and Mr. Joe Haley, the project's aerospace engineer and a world authority on protecting aircrews against crash-related injuries.

Helmets from all over the world are sent to USAARL through the Life Support Equipment Retrieval Program (LSERP). The LSERP operates under a triservice agreement, with USAARL being the agency to evaluate and analyze Army-Navy-Air Force life support equipment involved in an aircraft accident.

To date, more than 200 helmets from military aircraft accidents have come under the research team's purview. Analysis includes comparison of the helmet structural damage with flight surgeon reports which outline the cause of pilot injury and then recreation of the impact in the laboratory. From those studies come material and design alternatives to improve the helmet's impact performance.

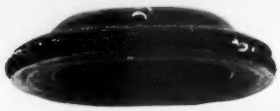
As an indication of the project's necessity, Captain Shanahan said that damage to the head, face and neck is the major injury cause to helicopter crewmembers and therefore presents the most significant



FORCE vs TIME (Standard SPH-4 and Corrugated Aluminum Earcups)

The standard earcup now used in the SPH-4 aviation helmet does not deform but cracks open after an impact of more than 2 tons of force

An experimental corrugated aluminum earcup before impact



The experimental earcup after the same impact as above

challenge for research that will lead to the prevention of such injuries.

"Results of studies indicate that about 32 percent of all head injuries and 42 percent of all fatal head injuries are preventable, even though there is almost universal use of the SPH-4 flight helmet by aviators," the doctor said.

The SPH-4 helmet, whose protective design originated at USAARL and which entered the Army system in 1970, has for 10 years represented the best available protective technology. But now, new materials and construction techniques, along with a better understanding of the nature of injuries, have shown that significant improvements to further reduce injuries are possible.

Side Impact Protection. Earcups in the SPH-4 aviation helmet provide outstanding noise attenuation, but their impact protection is at best debatable, according to Mr. Haley, a veteran of 20 year's work in military and civilian engineering projects. In less than one-tenth second after impact, the extremely rigid material now used transmits the total unbuffered force of an accident against the wearer's head.

Evaluation is being made of ways to reduce such blows from an unbearable 5,000 pounds of instant force to a more tolerable 1,000 pounds: Researchers believe that a "crushable" earcup, perhaps with accordian type of construction, will accomplish this.

New Lining. The primary source of impact protection against head injuries for aviators is the helmet lining, and USAARL studies have shown the present one is not optimum. A new lining is being devised which will be thicker, less dense and more comfortable and will absorb more energy in an accident. With this new lining, the force transmitted to the head will be reduced about 50 percent.

Weight Reduction. Proposed changes are designed to reduce the helmet's overall weight from 3.4 pounds to about 2 pounds, a move which is expected to improve pilot efficiency and increase helmet retention.

DROP TOWER. Navy Lieutenant Commander Tom Reading, left, and aerospace engineer Mr. Joe Haley, attach an aviation helmet to a drop tower in the Biodynamics Research Division, U.S. Army Aeromedical Research Laboratory, Ft. Rucker, AL. This impact damage simulation is part of USAARL's research project to determine the best design and material for a helmet for Army aircrewmembers. Photograph by SP4 Deb Ellis

Commander Reading noted that heavier helmets can encourage a more forceful forward movement of the head in accidents, resulting in harder blows to it and also placing excessive stress on the neck. He said that weight hastens fatigue, possibly reducing the aviator's proficiency in using gunsights, helmet-mounted sighting devices and other ancillary equipment attached to the headgear. Too, the possibility that helmet weight can adversely affect a pilot's overall flight performance is being studied, Commander Reading added.

Keeping It On. Previous recommendations from USAARL have resulted in the SPH-4 helmet now having two chin-strap connections made of an improved fabric. Those changes were based on research which showed that one helmet in five with the previous connections came off during an accident. The team believes the improved retention is a definite way to prevent head injuries.

The effectiveness of those improvements will be negated, Commander Reading said, if the helmet is not worn correctly. Captain Shanahan agreed, saying that of helmets lost in accidents more than 30 percent are due to improperly adjusted chin and nape straps.

"While this is not related to retention, let me take this opportunity to stress the importance of using the helmet's visor correctly as protection for the face," the flight surgeon said. "About 80 percent of the aviators who were involved in accidents from 1972 to 1979 had their visors up, possibly subjecting themselves to facial injuries which could have been prevented."

Future Actions. The medical-design criteria developed by Mr. Haley, Captain Shanahan and Commander Reading in their comprehensive scientific approach to the prevention of head injuries will be summarized in a USAARL report. That, in turn, will be used by the U.S. Army Natick Research and Development Command, Natick, MA, and the U.S. Army Aviation Research and Development Command, St. Louis, MO, to develop and produce an improved new flight helmet for Army Aviation crewmembers.

Major Victor M. Sathre
Directorate of Training Developments
U.S. Army Aviation Center
Fort Rucker, AL

Specialty Code 15

Officer Basic Course Orientation Program

I'M GOING TO BE an aviator! What am I doing here? What is flight training really like? What can I expect as a career pattern? What is the training structure for SC15? Why? What about . . .?

Since Specialty Code 15 (SC15)/(aviation) was made a combat arm and an accession specialty, these questions and many, many more have been pondered by our young SC15 officers in the various officer basic courses that initially train the prospective aviator. Realizing the impact of the answers to these questions, the U.S. Army Aviation Center, Ft. Rucker, AL, developed a program which provides answers regarding career progression, training structure and rationale for SC15, and reasons an SC15 officer must attend the officer basic course of another combat arm. Additionally, this program provides valuable insights into flight training courses offered at the Aviation Center and a look at the people and communities which surround Ft. Rucker.

The orientation package consists of a narrative script with 35 mm slides and a new TV tape on the initial entry rotary wing (IERW) flight training course. To administer this program at the various schools, aviation faculty advisors have been appointed. These individuals are handpicked, senior grade Army aviators who will provide new SC15 officers an aviation contact point during the officer basic course to assist junior officers in better understanding their chosen career field. Along with the orientation package and faculty advisor's appointment, each SC15 student will receive a handout package consisting of an SC15 brochure, a booklet on initial flight training, information on Army Community Services and Ft. Rucker proper. Additionally, each month the student will receive a personal copy of the *Aviation Digest*. This program, combined with the ROTC (Reserve Officers Training Corps) aviation orientation and USMA (United States Military Academy) flight orientation, provides detailed, realistic, and up-to-date information on a combat arms career as a commissioned Army aviator.

In addition to the TV tape on the IERW, two other tapes have been produced at the Aviation Center and are available through all training and audiovisual support centers. These top quality tapes cover Ft. Rucker and the surrounding areas and the warrant officer candidate training program. If you or your unit are unable to obtain a copy of these tapes locally, you may send a blank tape to the Aviation Center, ATTN: ETV, Ft. Rucker, AL 36362, and a copy will be produced for you and returned. These initiatives are aimed at better informing potential flight training applicants of the scope of their training to follow as well as acquainting them with the facilities and local environment found at the Army Aviation Center so that they might more easily transition into their new assignment.

SC15 FACULTY ADVISORS

INFANTRY	**COL WILLIAM L. SHACKELFORD**	**AUTOVON: 835-5023**
ARMOR	**COL ROY A. WULFF**	**AUTOVON: 464-5353**
FIELD ARTILLERY	**COL WILLIAM R. HENSLEY**	**AUTOVON: 639-3003**
MILITARY INTEL	**LTC JOHN C. URQUHART**	**AUTOVON: 879-3652**
AIR DEFENSE	**MAJ ROMAN L. MILLETT**	**AUTOVON: 978-4445**
SIGNAL CORPS	**LTC JOHN R. BAUMGARTEN**	**AUTOVON: 780-3985**

☆U.S. GOVERNMENT PRINTING OFFICE: 1981-740-035/12

U.S. Army Communications Command
ATC ACTION LINE

Visual Approach Do's And Don'ts

UNDER CERTAIN circumstances, air traffic control (ATC) personnel may authorize an aviator to conduct a visual approach to an airport or to follow another aircraft when flight to, and landing at, the airport can be accomplished in visual flight rules (VFR) weather. There are, however, very definite responsibilities on the part of the aviator and controller which make for successful accomplishment of the visual approach.

The AVIATOR:

- ☐ Advises ATC if a visual approach is not desired.
- ☐ Complies with controller's instructions for vectors toward the airport of intended landing or to a visual position behind a preceding aircraft.
- ☐ After being cleared for a visual approach, proceeds to the airport in a normal manner or follows designated traffic and/or charted flight procedures, as appropriate, remaining VFR at all times.
- ☐ Understands that acceptance of a visual approach clearance to visually follow a preceding aircraft is aviator acknowledgement to establish a safe landing interval behind the preceding aircraft (if so cleared) and the aviator accepts responsibility for wake turbulence separation.
- ☐ Advises ATC immediately if unable to continue following a designated aircraft or encounters less than basic VFR weather conditions.
- ☐ Is aware that radar service is automatically terminated (without further advising the aviator) when instructed to contact the tower.
- ☐ Is aware that there may be other aircraft in the traffic pattern, and the landing sequence may differ from the traffic sequence assigned by the approach control or ARTCC (air route traffic control center).

The AIR TRAFFIC CONTROLLER:

- ☐ Does not vector an aircraft for a visual approach to an airport *with* weather reporting service unless the reported ceiling at the airport is 500 feet or more above the minimum vector altitude and visibility is 3 miles or more.
- ☐ Does not vector an aircraft for a visual approach to an airport *without* weather reporting service until the aviator reports that descent and flight to the airport can be made in VFR conditions.
- ☐ Does not clear an aircraft for a visual approach unless the aircraft is and can remain in VFR conditions.
- ☐ Issues visual approach clearance when the aviator reports sighting the airport or a preceding aircraft which is to be followed.
- ☐ Provides separation except when visual separation is being applied by the aviator of the aircraft executing the visual approach.
- ☐ Continues flight following and traffic information until the aviator is instructed to contact the tower.
- ☐ Informs the aviator conducting the visual approach of the aircraft class when pertinent traffic is known to be a heavy aircraft.

Aviator understanding of these simple do's and don'ts can turn a complex, confusing procedure into a safe, timesaving, fuel saving, traffic expediting tool.

Readers are encouraged to address matters concerning air traffic control to:

Director
USAATCA Aeronautical Services Office
Cameron Station
Alexandria, VA 22314

WINNERS
Armywide Flyoffs

First Place Crew

Captain Stephen E. Kee
and
Chief Warrant Officer, CW2, George D. Chrest
(see page 13)

The *Aviation Digest* reserved this page until presstime to be able to announce the winners of this competition.

Next month, we will report on all of the Army's competitors who will help make up the team which will represent the United States at the World Helicopter Championships to be flown, during August, in Poland.

World Helicopter Championships